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ORIGINAL ARTICLES

TEACHING OUR PATIENTS TO OVERCOME UNDESIRABLE MUSCULAR HABITS*

BY ALFRED PAUL ROGERS, D.D.S., BOSTON, MASS.

THERE are many roads to failure in the practice of orthodontia. Insufficient knowledge and lack of judgment in reference to the mechanical requirements of a given case may be considered one of the most frequent sources of failure. On the other hand, a skillful adaptation and manipulation of appliances may promise to terminate in an ideal result, so long as fixtures are operative. Unfortunately there are factors which rob the orthodontist of surety of success at this stage of treatment. If the facial muscular balance of the individual is in the least disturbed maladjustments corresponding in degree to the improper functioning of the muscles almost inevitably make their appearance. Last year it was my pleasure to read before the society a paper setting forth the principles of muscle culture under conscious guidance of the patient. The aim of that paper was to emphasize the importance of training the various facial muscles to a full performance of their functions. It has been my experience that more satisfactory results are obtained by giving proper attention to that phase of the treatment. It is my purpose in this short paper to bring before you a few suggestions that I trust may be of value when undertaking the control of muscles which may or may not be deficient in strength or tonicity, but which are nevertheless the source of orthodontic defects, and which may, if uncorrected, exert their evil influence after the skillful work of adjustment has been accomplished. The muscles which I refer to are those which are by some token influenced in their action by stimuli received from an unbalanced nervous system. The malinfluence of muscles habitually under improper control is of such a serious nature, and is so common and yet so far from being mastered by us, that I trust what I say may be understood as merely an attempt to awaken the minds of all the members of this society to the ulti-

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mate good that may be accomplished if we all pay more heed to the problems of this nature.

It is the task of the orthodontist to familiarize himself with all influences that have a bearing on his work, and his final results are a test of his diligence in acquiring this knowledge and effecting its practical application. It is not necessary at this time to attempt to enumerate all the faulty muscular actions that the muscles in and around the face are capable of assuming. It will be sufficient for each of us to call to mind some one or more of his own patients who have balked his efforts by their seeming inability to control certain muscular actions. While thus engaged it should occur to us that if we are able to teach our patients conscious control of any unruly muscle or group of muscles it will be greatly to their advantage as well as our own.

Vicious habits which endanger the permanence of our results are assuredly on the increase. Every orthodontist of experience has among his patients almost every type of child, but the most trying are those who have assumed habits which combat his skill. In helping our patients to help themselves we have a psychologic problem. It is none other than the teaching of our patients to break old and disastrous muscular habits and substitute in their places normal muscular action. In teaching conscious control of any muscle or group of muscles it will be understood that the will of the child must be so strengthened that it is able to withstand the insidious demand for wrong actions. The seat of the trouble is in the mind, and to the mind the operator must direct his attention. It will frequently be found extremely difficult to assign any reason for many of the actions which will come under his notice. In fact, the majority of these habits are exasperatingly unreasonable and therein lies a potent cause for anxiety. The actions are almost invariably found to be unconsciously performed. Some actions are slow, others are so quick as to almost deceive the eye. Some are performed during the waking hours, some during the hours of sleep. Studious children, of a not too robust constitution, are frequently found to be victims of these self-deforming habits. In a word, they seem to be an accompanying compensating evil which nature exacts of us more and more as civilization advances. It is, therefore, imperative, that we should recognize our duty in this matter if we may hope ultimately to rid our patients of their faulty muscular actions. In undertaking the treatment of these victims of habits one of the first duties of the orthodontist is to endeavor to establish a more healthy and more normal environment for his patients. Prescribe more outdoor life, more natural modes of living, greater care in selection of foods, less anxiety on the part of the parents for the extra scholastic standing by these children which is so often obtained at the cost of serious sacrifice of health by the excessive demand on their nervous energy. It means that the orthodontist must become instructor to the parent, and in undertaking this task, he must be well prepared with good and sufficient arguments to break through that irritating and unreasonable wall of scholastic ambition. Without some sort of cooperation by the parent orthodontic work requiring the correction of habit is discouraging—our efforts for the child in most cases will be of little avail. You are all familiar with the mother who upon her initial visit will tell you, in the child's hearing, that the patient is nervous and

hard to manage, etc.—little realizing that this method of parental suggestion is not only a strong factor in undermining the child's health, but is a positive factor in producing poor orthodontic results. Such parents should be instructed regarding the power of suggestion and given a few concrete examples showing what may be expected if such suggestions are continued.

One of the most important phases of this subject that the orthodontist is to remember when dealing with parents, is to remind them that negative suggestion is wrong suggestion. Show them how frequently it happens that the child brought up under negation is either docile and uninteresting or indifferent to right suggestion, or becomes positively rebellious by reason of the constant irritation consequent upon this kind of treatment. It is usually good practice when undertaking the correction of any habit to request the parents to make no reference to the habit in the hearing of the child. To leave the entire treatment in the hands of the operator. It is then essential that the child's attention be called to its abnormal performance in such a manner that it is brought to understand the nature of the habit and its consequences. Next, *there must be created within the mind of the child the conscious desire to rid itself of whatever action is proving disastrous.*

These are the first and fundamental steps, and they are not always easy of accomplishment, but after a few successful attempts the orthodontist becomes more skilled and is able to apply these principles to a greater and greater number of those who are in need. The efforts can not be intermittent, but must constitute as regular and as active a part of the treatment as the application and adjustment of appliances. They must also be accompanied by whatever methods the operator finds necessary for the building up of the health and strength of all muscular tissue surrounding the muscles involved, because teaching the conscious control of other groups of muscles will tend to develop a stronger will-power in relation to muscle work—one that will be instrumental in destroying the abnormal impulse.

On some occasions it will be found of value to drill the child on conscious control of one muscle at a time. If any group of muscles is found to be lacking in tonicity, exercises of any nature which will tend to produce a more healthy group may be employed. For instances, in the correction of the habit of mouth breathing, after adenoids and nasal obstructions have been removed, it is well to institute a general facial exercise such as the one referred to at our last meeting. Accompanying this exercise a special exercise for the orbicularis oris is often found of value. For this purpose I have constructed a small exerciser which the patient uses at home, and is shown in Fig. 1. The hard rubber parts are inserted between the lips, which the patient is directed to contract, stretching as far as possible the elastics which engage the opposite levers. Elastics may be added as the strength of the muscle increases. I have in mind a young boy who habitually held his lips apart. The lack of balance thus produced allowed a protusion of the upper incisors to take place. After a few months of effort in the strengthening of the orbicularis oris, marked improvement was seen in the position of the upper four anterior teeth, the use of appliances being unnecessary. Other instances might be mentioned where marked improvement in mandibular positions has been obtained by conscious effort of the patient himself

The evidence has been so gratifying that it prompts the belief that the more attention we give to details of this nature, the more permanent and satisfactory will be our results.

Fig. 2 represents a class of malocclusion due largely to faulty muscular action. It was discovered that this child had acquired the action by imitating a faulty act of deglutition. Fig. 3 represents the child in the act of swallowing. This photograph was taken very carefully, and is accurate in every way.

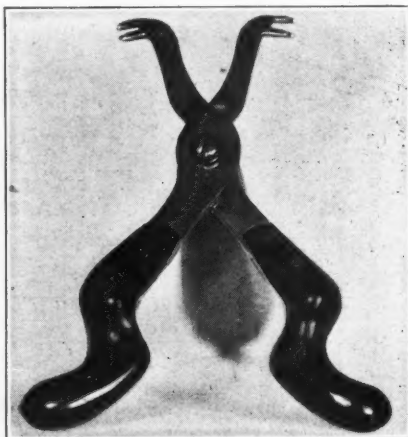


Fig. 1

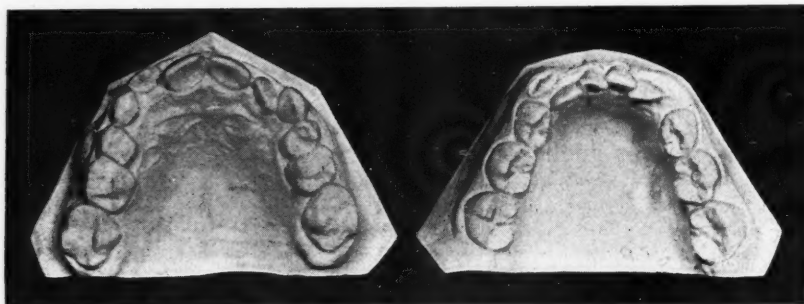


Fig. 2.

An excess of muscular pressure was brought to bear upon the teeth many times a day. A digital examination of the face during this moment of contraction showed an extremely vigorous tension of the muscles involved. In fact, the pressure was so great as to overcome the influence of the lingual wire for a short time after treatment was in progress. This patient was carefully informed of the existence of the habit. The futility of further treatment was explained to her in such a manner that she was able to comprehend the seriousness of the situation. A conscious desire to rid herself of the unfortunate habit was instilled in her mind—then careful instruction and practice in the proper use of the muscles involved in the act of deglutition. Fig. 4 illustrates this same child again in the act of swallowing, but after she had practiced and learned conscious control of these muscle groups. Treatment was then continued with a fairer prospect for satisfactory completion.

Many like instances might be given you, all varying in detail, but in under-

lying principles the same. I, therefore, shall not weary you by repetition, as each of you can call to mind experiences in your own practice, but shall present just one more case which has in it a suggestion of why we sometimes fail in teaching the proper control of the pterygoid muscles. This boy had been under my care for some time and showed very satisfactory improvement in following various exercises such as were presented to you at the last meeting, but disappointment at the slowness of progress led me to inquire into the habits of



Fig. 3.



Fig. 4.

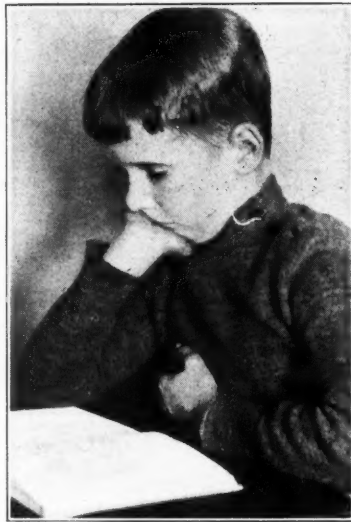


Fig. 5.

the child. I wished to place him under observation, and in order to do so I allowed him to remain in the room while treatment was given to his little sister. Being a studious lad he was under best observation while mentally absorbed. Therefore, my assistant secured for him a book, placing him at the table. It was not long before the cause of my disappointment was discovered. Fig. 5 shows

the habitual attitude of this young boy. When the father returned for the children he explained that this position was habitual at home, being the manner in which the boy usually studied or read. Many hours each day were spent in this attitude.

It will be profitable for us to grasp the idea that in our work with these little people it is not alone essential that we labor for the establishment of occlusion through mechanical means, but that we shall, with intelligence and patience, teach those under our care how they may also aid in the correction of their own difficulties by conscious, well directed actions which will result not alone in the correction of their deformities, but will fortify us against the inconvenience of the recurrence of treatment, giving us greater assurance of the permanence of the results.

PRESIDENT'S ADDRESS BEFORE THE PACIFIC COAST SOCIETY OF ORTHODONTISTS, 1919

BY B. FRANK GRAY, D.D.S., SAN FRANCISCO, CALIF.

THIS gathering of specialists in orthodontia marks the passing of another year,—a year so filled with epochal events as to all but submerge the usual serious considerations of our own relatively important work. In view of the magnitude of the world conflict we may feel our sacrifices, of whatever nature or extent, have been very fully justified. With the coming of peace, there should be inspiration to renewed endeavor, looking to the advancement of orthodontia.

PROGRESS IN ORTHODONTIA

I think we have gained more during the year, in the application and working out of principles already well established than in new methods or appliances. I often wonder whether we pay enough attention to the really efficient and splendid methods at hand, gaining skill in the technical procedures necessary to their intelligent use, before we discard them only to adopt some new mechanical contrivance, with which we experiment rather aimlessly, until it in its turn, makes way for still something else. All of which brings me to my oft-repeated conclusion that orthodontia, in its very nature, is a specialty, the scientific possibilities of which may not be attained without conscientious and doggedly persistent endeavor, no matter what mechanical assistants we employ toward the end in view. While I would not discredit the importance of efficient and refined appliances, I would caution against the eternal seeking for a royal road to the attainment of results, which we can not hope to achieve without painstaking thought and intelligent labor.

I have thus, without immediate intent, drifted into an initial consideration of appliances in a general way, and I may add the suggestion that I believe each one of us will greatly benefit himself as well as his patients if he keeps constantly in view the desirability of a good technic, whatever character of appliance is used. If I speak from the standpoint of one who seeks improvement in his own work, it is none the less in the hope of inspiring in the minds of the members of this society the same desire. A good technic is vitally important

for several reasons. Good technical work is due the patient, who must wear the appliances under all sorts of circumstances. Neatness of execution of this work is appreciated by other orthodontists, as well as by the worth-while members of the dental profession who may have opportunity of seeing the patient. And if a good technic is important for these reasons, it is no less so because of its influence on the orthodontist himself. We lose respect for our own work unless we do it well. Herein lies one of the very best arguments in favor of the use of the noble metals in orthodontia. Working with base metals has little appeal to the esthetic sense of the careful operator.

Doctor Ketcham was to be present to give us further suggestions in the use of the Angle ribbon arch mechanism. Since he could not come, and because of my own personal satisfaction in their use, I wish to testify to the value of these appliances. Certainly in the form of malocclusion commonly known as infraocclusion of the molars and bicuspid, where the so-called "overbite" is much in evidence, the control that may be attained with this mechanism is most satisfactory. I am glad Dr. John R. McCoy has something to show us relative to these appliances.

MECHANICAL FORMULÆ

Some insistent friends of, and in, our specialty, continue to recount their convictions as to the value of "dental engineering" methods as an aid to the work of the orthodontist. It is well in considering this, as in any other subject of importance, to dissociate personality from the controversy. There is a truth about this matter. It is either useful and correct, in part or in whole, or it is not. Many of us have our personal beliefs, which may not alter the facts, whatever they happen to be. Dr. James McCoy has something to present at this meeting that may help to enlighten us.

RADIOGRAPHY

My experience in radiography, coupled with my work in orthodontia, causes me to believe we should be more and more insistent on complete radiographic examinations of all patients under orthodontic treatment. The congenitally missing teeth; anomalous dentition, precocious or retarded as the case may be; the serious impactions of teeth—these and other conditions multiply the difficulties of our work, and nothing so assists in clearing up the whole matter from the diagnostic standpoint, as the careful use of radiography. To ignore it is to invite needless troubles, subjecting our patients to useless delays and in the end resulting in much personal humiliation to the operator. Why shall we, therefore, not make a hard and fast rule that under no circumstances will we proceed with orthodontic treatment until the radiographic examination is made?

PROPHYLAXIS

I feel there was a time in the earlier years of the specialty of orthodontia when prophylaxis and its requirements at the hands of the orthodontist was a rather sensitive subject. On the one hand we were blamed for enamel etchings or decalcifications, if not absolute dental decay, when the blame was far from wholly merited. But in our eagerness for acquittal from such charges I am not sure we did not make ourselves appear all too innocent. I find it requires very

conscientious work and observation to make sure that no harm shall come to the teeth of our patients during treatment. In this connection, Dr. Dunn has spoken to me relative to the wisdom of noting carefully the condition of the teeth of the patient at the time we commence our work. Such data should be a part of the case record. Certain defects, enamel etchings, etc., due to neglect, may be noted at that time, and unless we do make such a record we may be blamed later on for conditions for which we are in no way responsible. It may be well in such cases to advise the parents of conditions as they are.

Beyond doubt we would do well in not a few cases, to insist upon careful polishing of the teeth by a competent prophylaxis specialist, before appliances are in place. At the commencement of the period of retention a still larger percentage of children would profit very much through having the services of the periodontist before the retaining bands are cemented in place. A third favorable period for such attention would be, of course, when the retaining bands are all removed.

I feel it has not been so much the orthodontist's lack of appreciation of the advantages of expert prophylactic attention to the teeth of his patients, but the financial consideration may have been an exaggerated hindrance. How unreasonable it is, however, to assume a parent who appreciates the value of orthodontia, would fail to appreciate the safeguards secured to the teeth by skillful prophylactic attention! Of course there is the responsibility on our own shoulders at every step of the work, to see that the patients' teeth are not being neglected, and it would still seem we must supplement their efforts all too often, however disagreeable it may be.

I am enlarging a bit upon the subject of prophylaxis, simply because the orthodontist occupies a position of unusual opportunity. If I understand correctly, pyorrhea has its beginnings oftentimes at a very tender age. There are certain rough enamel surfaces sometimes noticeable at the gingivæ of children's teeth, which Dr. Frederick S. McKay, of New York, tells me are most certainly the forerunners of pyorrhea alveolaris. I am sure Dr. McKay would have no lack of support in this matter from other prominent specialists in periodontia. Our practices, composed as they are of young children, offer unusual advantages of observation. Should we not be more alive to the situation and thus be able to recommend proper treatment when these conditions are present? We need to guard against a careless, one-sided method of diagnosis. While noting conditions of malocclusion, which happens to be our chief interest, let us study carefully all conditions that have to do with the health of the gingival margin. I am persuaded that many cases of inflamed and hypertrophied gums are due to roughened enamel surfaces, and not necessarily to deposits.

TEACHING OF ORTHODONTIA

I do not know that any special progress has been made in this department. I believe it is one of the unsolved problems. The suggestion I heard Dr. Angle make a good many years ago is still fresh in mind. He felt that an endowed institution would alone permit of the ideal facilities for carrying on the work satisfactorily and worthily. It would appear the institutions at Boston and Rochester might approximate this idea more nearly than any others now in ex-

istence. The specialty will welcome an improved method of teaching orthodontia, I am sure. With all due respect to those who have attempted teaching the subject in dental schools, it has, so far, been a laborious, unsatisfactory proposition.

PERIODS OF TREATMENT

We need to exercise wisdom in the matter of prolonged periods of treatment. A child may present at the age of four to seven years, with narrowed dental arches, possibly with mesio-distal inharmonies of relation between the upper and the lower. Very properly the arches may be expanded to a suitable degree, and erupting incisors guided into their right positions. At such a youthful age it would appear a tolerably brief period of retention should suffice. But all too often the retention period is not ended before some further discrepancy is noted. Presently a second period of treatment may be inaugurated: possibly the "over-bite" must have attention; maybe the root apices of the incisors must be moved labially,—there may be any one of a number of reasons for keeping the child under treatment for a few more years. I think some of our patients wear orthodontic appliances over too long a period of time. In spite of the opinion of those who think differently, I believe this subject demands careful consideration. May we not hope for some more clearly defined rationale or system along this line? It does not seem justifiable to me that a child should wear appliances from four or five years of age until twelve or fourteen. There should be some breathing spells during which the mouth may be free from all mechanical fixtures. Let us do thoroughly what is necessary for the child, whether at four or six, or at eight or ten years of age, retain the teeth a sufficient time, and then remove the appliances in their entirety. Should there be the occasion for it a year or two later, another period of treatment may be considered.

ETHICS

In the belief that something can be done to improve conditions, orthodontists may be prone to inaugurate new treatment periods, especially for children who have been treated by other specialists. They may be a bit thoughtless of the likelihood that the majority of their own patients, no matter how conscientiously treated, may present some discrepancies. Particularly is this true during the period of dentition, a time of great transition, of course. Leastways in dealing with parents we will do well not to discredit the efforts of other specialists. Possibly a second period of treatment, a year or so later on, was in contemplation by the first orthodontist.

COMPENSATIONS

In conclusion, the conscientious orthodontist gives much of himself to his chosen work. The demands of successful practice are so great that possibly the financial rewards may not be regarded as wholly commensurate with the expenditure we make in time and energy. But there are other compensations than money, and what it buys. The knowledge that we have corrected abnormal dental arches and prevented or cured facial deformities, thus contributing to the health and happiness of children and benefiting them throughout the whole of

their lives to a degree hardly possible of computation, these are considerations that should go far toward causing us to appreciate the happiness of our lot.

Again, the privilege of working for children, many of them of rare spirit and understanding, is one of the compensations we may sometimes overlook when burdened with a sense of the difficulties of our work. These little folk form a clientele, the equal of which practitioners of no other specialty may enjoy. The boys and girls whom we serve should be an unfailing source of inspiration to every orthodontist. Surely the conscientious doing of our self-allotted tasks will bring to us all necessary compensations.

DISCUSSION

Dr. John R. McCoy, Los Angeles, Cal.—Our president has certainly given us some food for thought in the splendid address which he has just presented. His desire that orthodontia of the higher type should continue to progress I am sure is shared by every one of us.

Dr. Gray brings up the matter of appliances in a most pleasing and conservative manner, emphasizing the value of efficient and refined appliances instead of taking the view of the radical who features his pet appliance as a "cure all" for every case.

For years past we have all agreed that radiography was quite an essential part of our profession, but this is really never brought home sufficiently until some day a permanent tooth fails to develop and we realize our earlier knowledge of the condition would have been most valuable. In just such an event do we "turn over a new leaf" and make our radiographic diagnosis when the case is started. In our office we have a diagram on our record cards to indicate presence, absence, or conditions of unerupted teeth recorded from a radiographic examination.

I presume that all of us have had complaints of cavities, etc., after the completion of treatment, the most of which existed before the patient was put into our care. On our record cards of which I just spoke, there is a simple diagram upon which is noted the conditions of the various teeth so that most of these unpleasant occurrences can be avoided. Of course, I believe in every possible defect of tooth surfaces being cared for before orthodontic treatment, but this is not always attended to by the parent.

There are probably several reasons why teaching orthodontia has not been successful in our colleges, one of which is the lack of interest in the subject by the student who considers orthodontia some vague problem, the solution of which is impossible for him.

The criticism of a former orthodontist's work by the man who is "retreating the case" as a rule is certainly not justified; however, I believe that most of us have brought this criticism upon ourselves by promising entirely too much when we begin the initial treatment. Some of us have been guaranteeing permanent results, forgetting that if the initial cause of the abnormality should return malocclusion will recur shortly.

I want to thank Dr. Gray for this contribution and assure him that it has put some of us to thinking.

Dr. Allen H. Suggett, San Francisco, Cal.—This is a most excellent paper. The reference to appliances is very apropos, for we are getting away from sectarian dentistry, as Dr. McCoy has very aptly put it, and are using more and more independence in the use of appliances. At the last meeting of the American Society of Orthodontists there was manifest a very liberal spirit in the use of appliances. Most everybody has abandoned the screw D band and is using the appliance he thinks is applicable to the case, whether it be the labial expansion arch, the lingual wire, the pin and tube, or the ribbon arch wire. There does not seem to be any lese majesté about it any more.

I find that in many cases a lingual wire is ideal, but in other cases it would be a loss of time to confine yourself to it. In many cases of distocclusion, the simplest appliance would doubtless be a lower lingual wire and upper molar bands and a labial expansion wire and Baker anchorage.

There is a tendency not only to use the appliance that seems applicable to the case in hand, but the one which that particular orthodontist can handle the most skillfully.

Dr. Leland Carter, San Francisco, Cal.—I believe, as Dr. McCoy has said, that Dr. Gray has indeed given us some food for thought. I was very interested in his remarks regarding radiography, also his statements relative to a thorough clinical examination before cases are started. I believe that if the radiographic and clinical examinations were adhered to more strictly, a great many mistakes would be avoided, and we would not be blamed for causing decay so often as we are at present.

So far as appliances are concerned, I believe it is a good idea to master a certain type of appliance and stay with it as long as you get results, or until you are certain that some other type is superior and will increase your efficiency. One orthodontist might be very successful with a certain type of appliance, while another might not get good results—the personal element must be taken into consideration as well as the mechanical efficiency of the appliance. If we jump around from one type to another, we will never get anywhere. We all know there are many appliances in use that work fine on paper, but—well, they are more valuable to the manufacturers than to the orthodontist.

Dr. A. A. Solley, San Francisco, Cal.—While I think most of us make records in regard to the tooth structure on our cards, yet, many of us are probably a little lax in making these records. It is a lax system not to have a statement whereby the orthodontist, as well as the patient, knows absolutely what the condition of the mouth was when the work was started. I believe we should go over the mouth very thoroughly and note all the work that is to be done. We should get in duplicate a record, at that time, showing what the dentist has done and have the patient sign it. The record cards should show the condition that the child's mouth was in when the work was started. In that way many difficulties that afterwards come up could be obviated.

Dr. Gray (Closing).—I wish to thank Dr. McCoy and the other members who have discussed my paper. Dr. McCoy and Dr. Solley have referred to the disintegration of teeth, and the idea of keeping adequate records of these conditions. Dr. Engstrom I think carries out the plan of such a complete record card, which is signed by the patient as an acknowledgment of existing conditions, fee, etc.

Referring to Dr. Suggett's remarks, we will all do well to remember the "D Band" permits of an accuracy of adaptation to certain molar teeth that can not be secured by any other band. I think that is obvious.

SYMPOSIUM ON THE ADVISABILITY VERSUS THE INAD-
VISABILITY OF MAINTAINING SPACES IN THE MOUTHS
OF CHILDREN, WHERE TEETH ARE MISSING, FOR
THE PURPOSE OF LATER INSERTING ARTI-
FICIAL SUBSTITUTES

DRS. BURT ABELL, D. W. FLINT, AND J. LOWE YOUNG

No. 1. By Dr. Burt Abell, Toledo, Ohio

WHEN Dr. Kemple asked me to take part in this symposium, I had a good mind to refuse, because I felt that I had no experience that was different from that of any of you, but after he said we should make it a report of cases, I told him I would do the best I could.

I am here to get help out of this discussion. I will tell you what I do and what I propose to do, and if you will tell me what you would do, I shall be grateful.



Fig. 1.

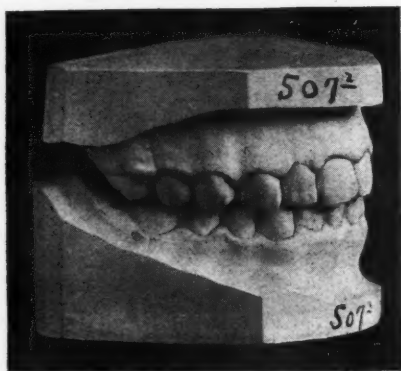


Fig. 2.

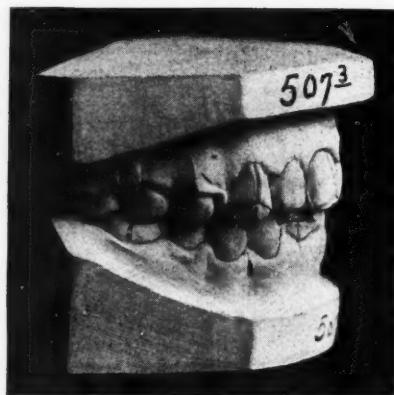


Fig. 3.

There is nothing in my practice so bad to manage as cases in which there are absent or missing teeth.

Fig. 1 is a model of a case that came to me a year or so ago. The first upper permanent molar on the right side was missing—extracted, and an attempt was made to move the second permanent molar forward to take its place. This is pertinent to the subject because wherever this can be done it is an advantage to do so. (Fig. 3 is later than Fig. 2.) When I discovered the molar was taking



Fig. 4.

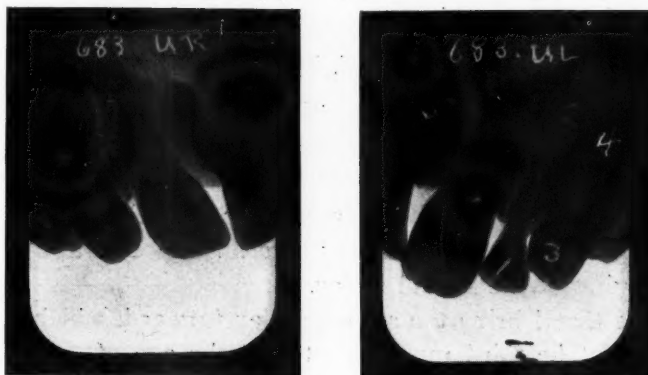


Fig. 5.



Fig. 6.



Fig. 7.

an excursion, I took a wax impression and made a study model of the case. The point I want to bring out here is, is it possible to make that upper second molar take the place of the first permanent molar and make it stay there. (It appears to be making the attempt to resume its old position.) I think it is a crime to put in an artificial tooth if we can possibly avoid it, in children.

In Case 683 (Fig. 4) the lateral is missing. The one showing is temporary.

Nature has tried to do the proper thing by moving all the upper teeth forward, and I am going to leave this arrangement of teeth as near as I can and make the mesiobuccal cusp of molar take the place of the second bicuspid and use the cuspids as laterals rather than put in artificial substitutes of any kind. In Fig. 5 I have had the photographer arrange the films so that you are facing the model. There is a supernumerary which does not enter into consideration of this case and was extracted. Notice the permanent laterals are absent. Is there any better treatment than I have outlined?

Fig. 6 is a case which proves we need to make extensive x-ray examinations where temporary teeth are present. This upper second bicuspid came into place and adjustment was made of the molars and the other teeth. I got fairly normal occlusion with the lower temporary tooth in position. I waited and waited for that temporary tooth to be discarded, but I finally became alarmed about it, and Fig. 7 shows what I found on x-ray examination. Please remember the good condition of the temporary tooth at first. If I had known the permanent tooth was missing, I could have saved the temporary tooth by exercising some care and retained it for a long time. This is my report to you with the S.O.S. call.

No. 2. By Dr. D. W. Flint, Pittsburgh, Pa.

Did you ever hear the expression, "I never thought of that?" It just so happened years ago that one day J. Lowe Young was visiting in my office when I was about to treat a case in the usual way where the lower left first molar had been prematurely lost, with the characteristic conditions, apparent protrusion in the upper arch, retraction in the lower anterior region with a forward, downward, inward tipping of the second molar.

He suggested that I bring the second molar forward, which I did with very gratifying results. The third molar erupted at the age of sixteen and took its place in good shape.

Well, this was the first breaking away from dogmatic teaching, and I suppose I have been falling from grace more or less ever since.

I might say here that on several occasions I have endeavored to bring the tooth back of the space forward and failed of accomplishment when I had to resort to pushing the same back preparatory to insertion of a bridge. This is my practice, first to try and close the spaces, and if the osseous conditions are such that I can not deliver, then I resort to our first teaching, this, of course, applying to the loss of the six year molar.

When a lower lateral or central is congenitally absent I have practiced both ways, but you will find a heap of common sense among our patients, and to hear testimony from their own lips, they would rather have a slight rotation of some of the upper incisors, owing to the extra amount of tooth substance, than to be inflicted with bridge work or artificial substitutes in any form all their days, and I heartily agree with them. I would not now open up a space in the lower incisor region.

It is a calamity when a patient is handicapped by the failure of nature to give the allotted number of teeth, but they will live through it, even if we are very much perplexed as to our plan of procedure. The fact is, our work is only difficult as we have mutilations in any form, and here is where we need all the knowledge we can command.

I want to report on one case of a boy, eleven years of age. A lower first bicuspid had made its appearance, but stayed stationary for six months, when upon x-ray examination it was found to be full of pus with a large area at the apex. This tooth was taken out and in five months his second bicuspid and both molars were brought forward perfectly. I have with me the models of the case. This to my way of thinking was a really worth while operation, and it opens a field, a new field, in this day, when we are hearing so much and are having such bad reports of rarefied areas.

The laterals are quite often missing. I am in that boat myself, but I would rather be shy than have the best artificial substitutes that I know anything about. I know of one case where the spaces were opened up and for a mature man substitutes supplied, and the facial appearance was simply awful.

For girls, in the anterior part of the mouth, I will say that I have not been disappointed in a single case when I have opened up the space and replaced with a dummy. I have one lateral being carried by a very stiff iridio-platinum band, and in twelve years the same has not even become uncemented. This same case the dentist refuses to take off as in his judgment it is a much better piece of bridge work than he could offer; the color, the shape of the tooth, and all being so satisfactory, and yet the same was only placed as a temporary piece of work.

I doubt whether a rigid rule can be laid down for any one's guidance in the matter of when to and when not to open up spaces, and we must use common sense and all the light we can get to govern ourselves, and then after we have done our best, let the other fellow worry if there is to be any.

No. 3. By Dr. J. Lowe Young, New York City

We can not put too much emphasis on the fact that the best results from an orthodontic standpoint can not be obtained unless the full complement of teeth are present. This topic deals with cases where teeth have been lost or are congenitally absent. It has been my good fortune to have had but few cases of children mutilated by the exodontist, but many cases have been treated where the teeth were congenitally absent. Many adult cases have been treated that were mutilated.

In this article "missing teeth" refers to those which are congenitally absent and "lost teeth" to those which have been extracted. This subject may, therefore, be divided into three parts: First, those under fifteen years of age with teeth missing; second, those under fifteen years of age with teeth lost; and third, those over fifteen years of age with teeth missing or lost. It formerly was thought that the upper lateral incisors were the most liable to be missing from the permanent set, but careful observation has proved this to be erroneous. My records show the lower second premolar missing more often than any other tooth from the permanent set. The number of teeth found missing ranges from one to many. The greatest number of missing teeth I have encountered is seventeen.

In the treatment of mixed dentures it is advisable to have x-ray pictures of all deciduous teeth areas to determine whether their permanent successors are present. When the x-ray shows that not more than four permanent teeth are missing and the roots of the deciduous ones are not resorbed, it is deemed good policy to preserve the deciduous teeth as long as possible. If, however, the roots of the

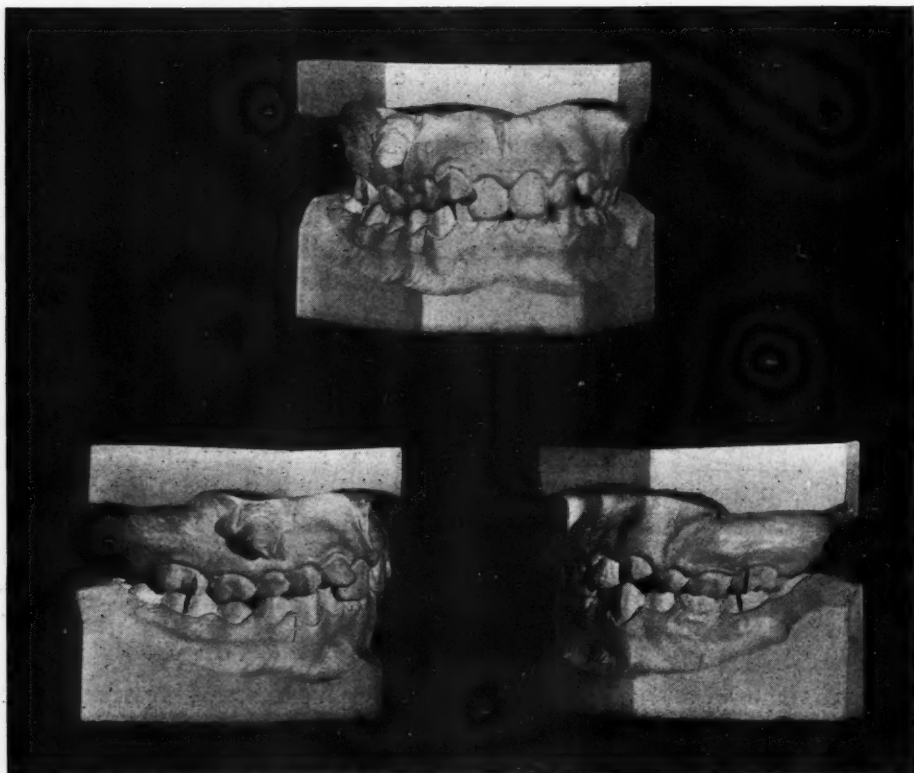


Fig. 1.—Shows cast of a girl of twelve with the right upper canine erupting over the deciduous molars. Some years previous this child had an infected antrum and the surgeon who opened into it from the mouth removed the developing premolars and caused the death of the pulp of the canine. The x-ray substantiated this history.



Fig. 2.—Shows the cast of the same case. The permanent canine being removed allowing the deciduous canines and molars on the right side to remain.

deciduous teeth are resorbed to any great extent (and they do resorb even though the permanent successors are missing) another method of treatment might be resorted to. I have never seen the upper deciduous laterals in place with good roots where the permanent ones are missing, but have frequently seen deciduous canines with roots showing little or no resorption—the permanent canines erupting either mesial or distal to the deciduous ones.

Part I.—In treating children under fifteen years of age with missing teeth we must be guided by the number of teeth missing. If but one upper lateral is

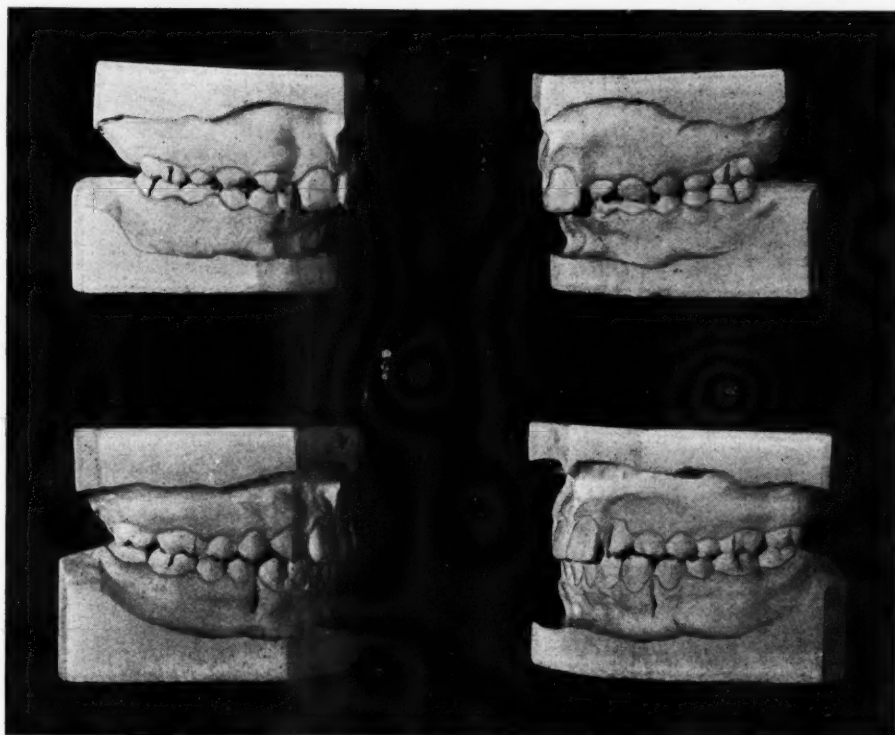


Fig. 3.—Shows casts before and after treatment of a girl of twelve. Permanent upper laterals missing, left deciduous canines still in place.

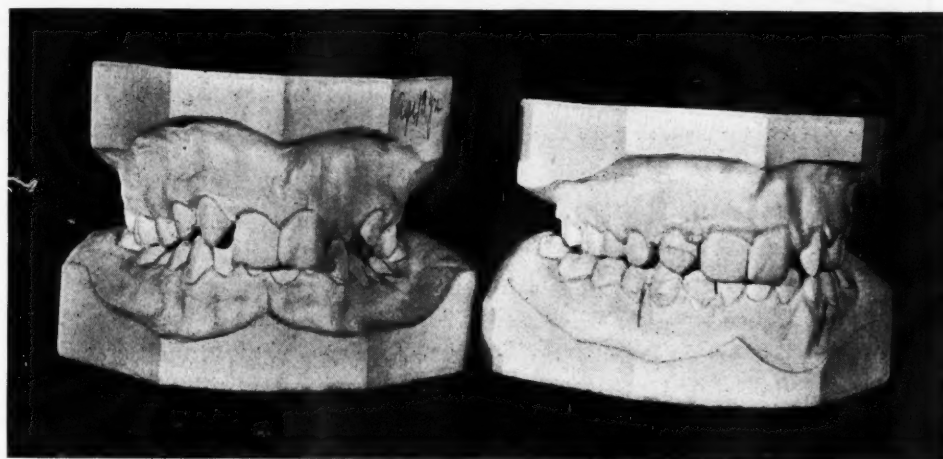


Fig. 4.—Front view of Fig. 3 before and after treatment.

missing and the deciduous canine has a good root, I would treat the case as though the full complement of teeth were present, permitting the deciduous canine to compensate for the missing lateral for I have seen this tooth in the mouth as late as forty years of age and while it is true that it is not the same shape as the lateral and that it becomes an entirely different shade from the permanent teeth, I would still consider it better policy to retain it, for we must not lose sight of the fact that the laity do not observe teeth as critically as do dentists and orthodontists. In like manner would I treat a case with both upper laterals missing and the deciduous canines having good roots.

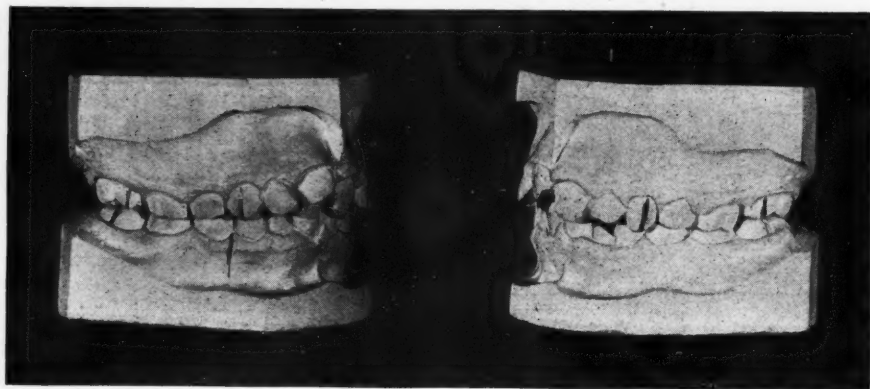


Fig. 5.—Casts of girl of seven and one-half with one upper lateral missing.

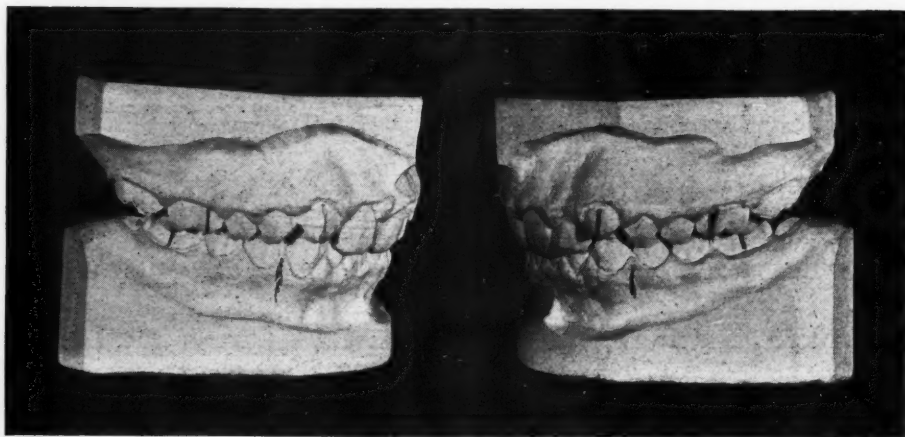


Fig. 6.—After treatment of this case which is unsatisfactory owing to deep overbite.

Where the upper lateral is missing and the deciduous canine is lost, I would then advise the placing of the canine in contact with the central and the moving of all the upper teeth on that side forward, which, of course, necessitates establishing a malocclusion on one side, but if carefully done and then by slightly grinding the cusps of the premolars and molar teeth a very efficient occlusion can be obtained. Where both upper laterals are missing and the deciduous canines are lost, the same method of treatment would be pursued, establishing a malocclusion on each side.

Where the second premolars are missing and their deciduous successors lost or their roots resorbed, I advise the moving forward of the first permanent molars,



Fig. 7.

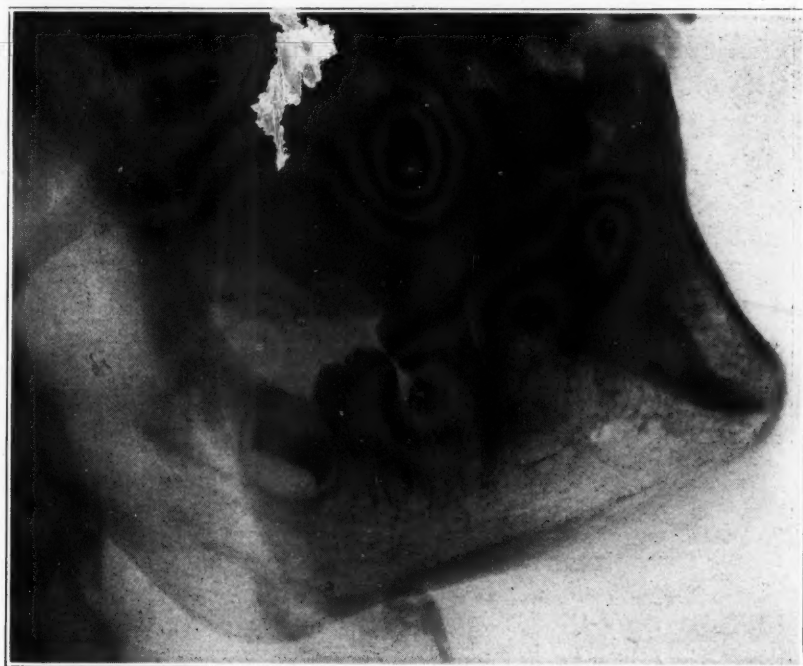


Fig 8

Figs. 7 and 8.—Made from x-ray plates taken extra-orally of the mandible of a child of eleven showing the second lower premolars missing and the third molar present. In such cases I advise the removal of the deciduous molars and carrying the permanent molars forward so as to close the space.

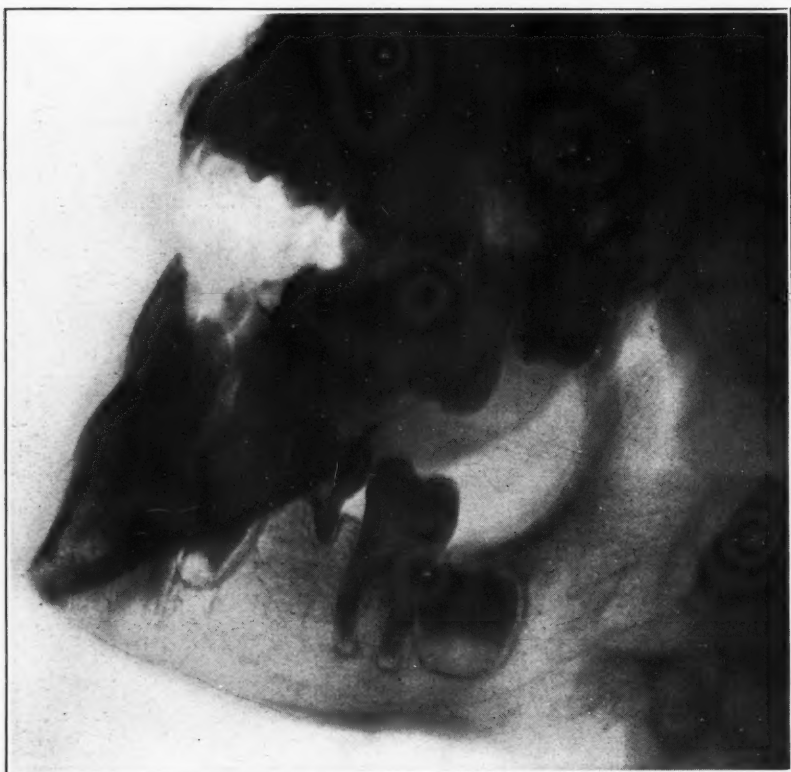


Fig. 9.



Fig. 10.

Figs. 9 and 10.—Pictures of a child nine and a half. While the third molars are not clearly shown the roots of the second deciduous molars are so resorbed that I would advise their removal and treatment as in the preceding case.

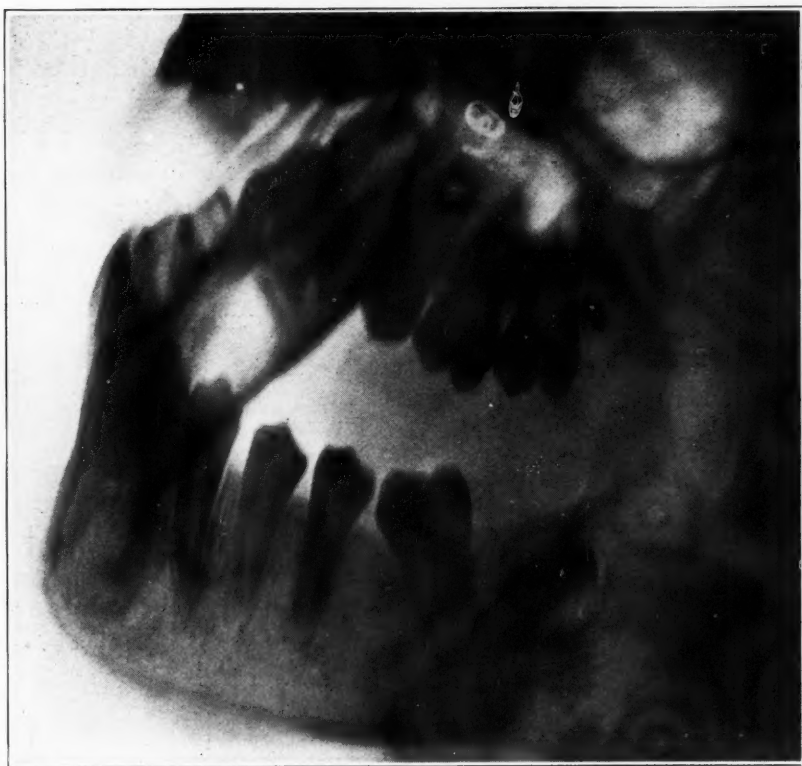


Fig. 11.

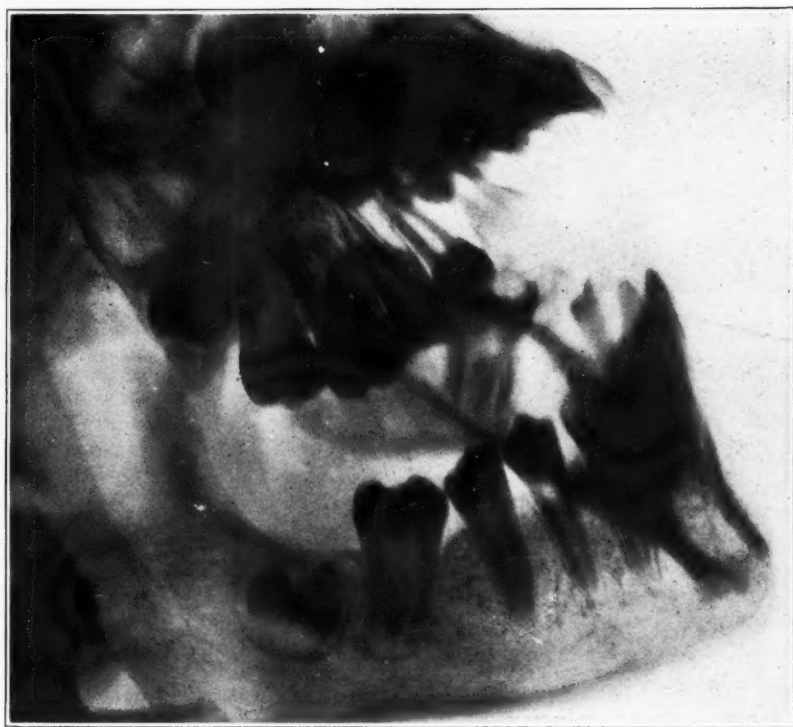


Fig. 12.

Figs. 11 and 12.—X-ray plates of a boy of eleven, the lower first permanent molars having been removed. In this case I then advise the carrying forward and straightening up of the second molars thus establishing a malocclusion and a compromise treatment.

placing them in contact with the first premolars. This would be done regardless of the number of second premolars missing. Where more than four premolars are missing and the deciduous teeth lost or their roots badly resorbed, I then deem it advisable to provide for the full complement of teeth as much as I regret the necessity for a child to be compelled to go through life with artificial teeth.

In the case of missing lower incisors, if but one or two are missing, the same course might be followed as where the upper laterals were missing, but I have never seen the deciduous canines retained in these cases and I have never treated one in this way. I recall two cases where I have maintained a place for the miss-



Fig. 13.



Fig. 14-A.

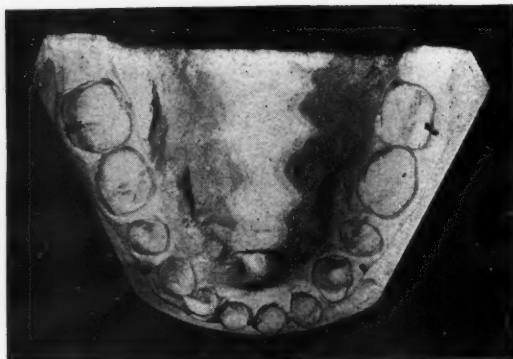


Fig. 14-B.

Figs. 13 and 14.—Casts of a girl of sixteen, showing the 15 permanent teeth in the mouth. Three of the lower incisors being deciduous ones, the second deciduous molars being present both upper and lower. X-rays showed there were no teeth to erupt. This is the most pronounced case of missing teeth I have ever encountered.

ing incisor, but in our present light of the baneful effects of supplying missing teeth I would advise the other method of treatment. Where more than two lower incisors are missing it then becomes necessary to maintain the spaces for the full complement of teeth. I have never seen a case with a missing canine.

Part II.—The tooth usually lost in children under fifteen years of age is the first permanent molar, and the lower more often than the upper. In such cases it is deemed advisable to have x-ray plates made extra-orally so as to determine whether the third molars are present, and if so, impacted or otherwise. Where present and not impacted, it is deemed advisable to move the second per-

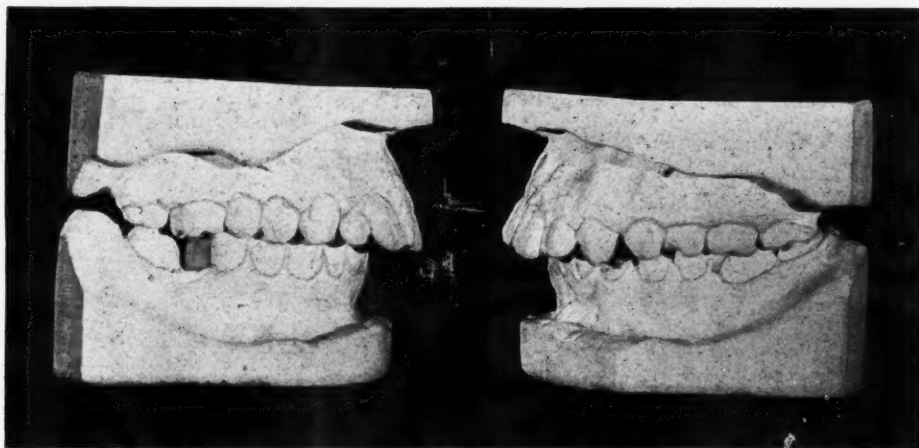


Fig. 15.—Casts of a woman of twenty-five with the lower first molars removed and a deep overbite. Class II malocclusion.



Fig. 16.—A study model of the case described above during treatment, opening up the space for the first molars.

manent molar forward, placing it in contact with the second premolar unless the incisal overbite is so pronounced as to render this inadvisable. This method I would pursue where one or more first molar is missing, and would consider it good practice where one was missing to remove its mate on the opposite side if the pulp had been lost from it.

In the case of lost upper first molars I would advocate this method of treatment even if there were a pronounced overbite in the incisal region.

Part III.—In patients over fifteen years of age with missing or lost teeth most of my work has been the treatment of cases with lost teeth. One case at

nineteen with one upper lateral missing was treated by removing the lower premolar, thus compensating for the missing tooth in the upper arch, and this I might say is the only case in my entire practice where I have removed a permanent tooth for the treatment of malocclusion. Careful observation will prove to any one that wherever the first permanent molar is lost the tooth distal to it tips forward and rotates lingually. This permits the corresponding tooth in the opposing arch to drift buccally and elongate, thus rendering it impossible to properly sup-

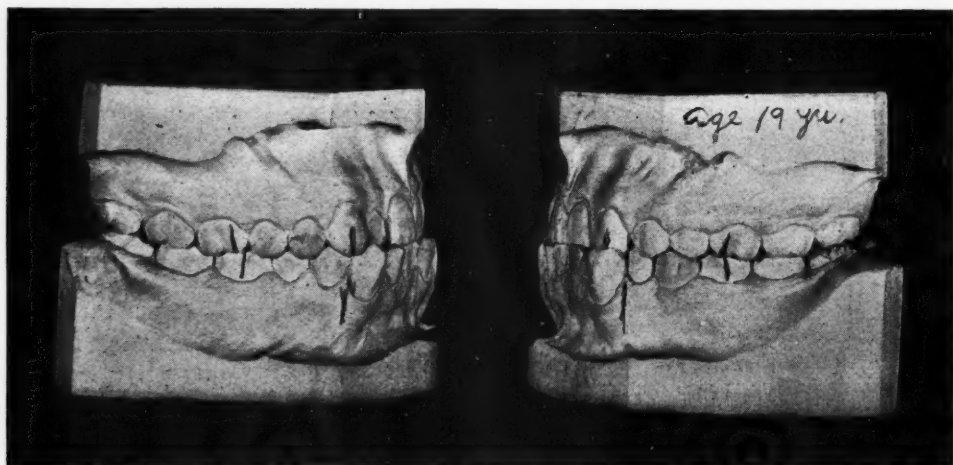


Fig. 17.—Casts of a young man of nineteen, the left upper lateral missing and the right lateral of diminutive size. It was decided to remove the lower left premolar and thus obviate the wearing of artificial teeth.

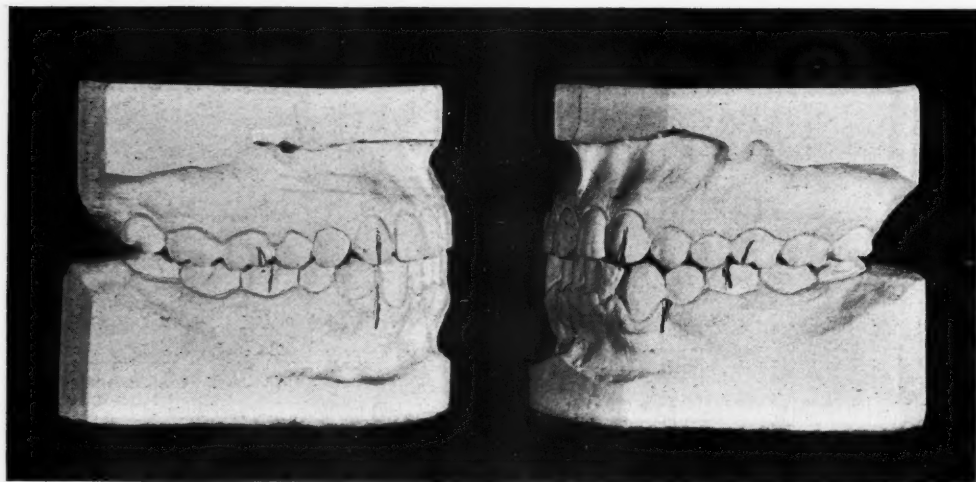


Fig. 18.—Shows the result with a porcelain jacket on the diminutive lateral and the canine and second molar in contact on the lower left.

ply the missing tooth by any method. In such cases I would advise the straightening up of the tipped second molar in one of two ways: where the overbite in the incisal region is deep the second molar should be placed in its proper position and the upper molar depressed in its socket so as to establish the proper plane of occlusion so that the artificial tooth can be substituted for the lost one. Where the overbite is shallow the second molars can be carried forward and straightened up, thus obviating the necessity of an artificial substitute.



Fig. 19.—Made from casts of a girl of twenty-one with upper laterals missing. It was decided not to open up spaces for these teeth.

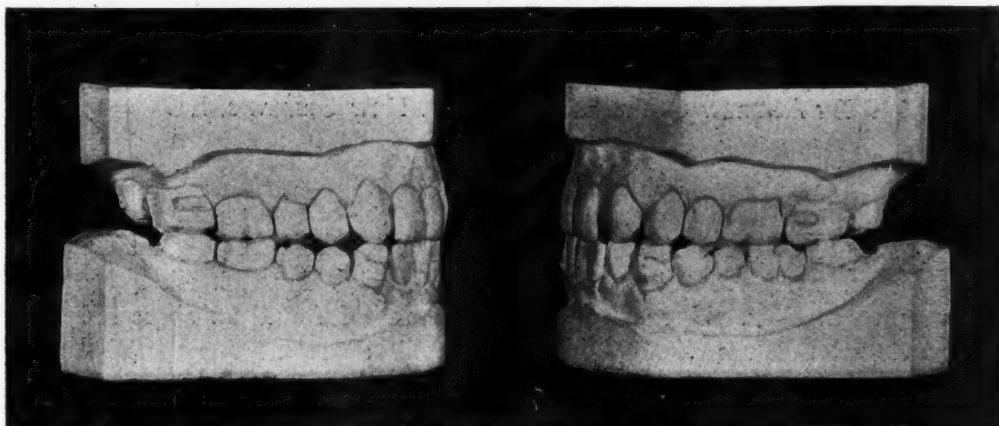


Fig. 20.—Shows the result of treatment.

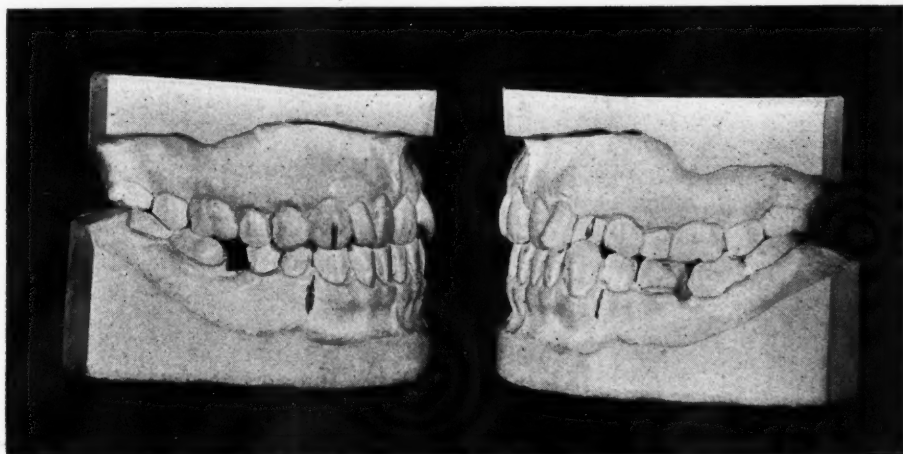


Fig. 21.—Casts of a woman of forty-four with lower first molars extracted; very slight overbite. In this case the lower molars are being carried forward, obviating the necessity of bridge work.

DEPARTMENT OF ORAL SURGERY AND SURGICAL ORTHODONTIA

Under Editorial Supervision of

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AN OPERATION FOR AN UNERUPTED TOOTH AND THE RESTORATION OF THE PARTS BY ARTIFICIAL DENTURE, WITH PRESENTATION OF A CASE*

BY ANDREW G. FRIEDRICHS, M.D., NEW ORLEANS, LA.

COLORED female, age thirty, married, with two children, about two years ago began suffering with a severe pain about the face; this was followed with a swelling of the face on the left side, the pain continuing all the time. When the patient presented herself to me I found a dense, hard, bony mass; the growth was slow. Upon examining the mouth I found an abscessed tooth and concluded that the swelling was due to this abscess. The tooth was extracted. I thought this would have explained the condition. The socket was curetted and the abscess drained. The patient was discharged and I thought that the trouble would be relieved. She came back a few weeks later, with no improvement in her condition; the pain still very severe, especially at night.

I might mention that I had an x-ray picture taken before I extracted the tooth, as it is my custom never to proceed with any unusual condition without one. The skiagraph gave no indication of anything unusual. I made a further investigation and found the swelling to be an enlargement of the bone. I then concluded that it might be an odontoma adamantinoid cyst, as both the bicuspid and cuspid were missing and in the arch, and had not been erupted. I had another skiagraph taken, with no better result than the first. The patient complained so much that it was necessary for me to make an attempt to relieve her. I concluded that I would chisel into the bony mass, through the alveolar process and superior maxillary bone. I found the bicuspid tooth embedded in the bone. Position of the crown: The lower part at about the ala of the nose, extending upward towards the inner canthus of the eye; the position of the tooth is shown in the piece of bone which has been removed. The operation was performed on

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the 25th of last February, the wound healed up, and she has been free from any discomfort since, except the loss of bone in the mouth, which left a large hole in the upper jaw. Her phonation and mastication were interfered with; she ate with difficulty and could hardly speak. Being responsible for her condition, it behooved me to make her comfortable, so I have restored the removed parts with the missing teeth by an artificial denture. Her future existence will be without trial and tribulation, as she can now phonate and masticate and swallow as well as she ever did.

One of the most surprising things about all operations on the jaw and face is the fact that the surgeon who operates seems to give very little attention to the deformities which they occasion as the result of the operation. They seem to be satisfied whenever they operate and remove the cause of the trouble; no matter what may be the resulting deformity, they consider their effort a great success. In amputation of the limbs, they would consider themselves poor surgeons if the resulting stub was not of a character to make the use of the artificial limb practicable.

You would be surprised, in operating on the jaw, how seldom it is necessary to make external incisions. I contend that whenever an operation is contemplated upon the face or jaw the resulting deformity should be considered, and the incision should be so arranged as to occasion the least disfigurement. One of the most pitiful evidences of this was a case of removal of the superior maxillary. This patient was a man of refinement. The loss of tissue occasioned such a deformity that, being a man of an extremely sensitive nature, he shrank from society, would not even go back to his family, and finally drifted to a crosstie camp. As he expressed himself, he was hardly human and was forced to eat like an animal. His phonation was difficult, he could hardly speak above a whisper, and his disfigurement was very pronounced. He came to my clinic in the hospital, suffering with a lesion from a tooth on the opposite side, with the story above related. He told me that life had become a burden to him, that he had about reached the limit of his endurance, and he did not believe that life would be worth living if his condition could not be relieved. The lost maxillary was restored by an artificial appliance, his face deformity relieved, his phonation, mastication and deglutition restored. He was a happy man.

This operation (removal of maxillary) was performed by a surgeon of prominence in Buffalo. This unfortunate man had suffered for five years before I saw him, and what appeals to me as most remarkable is the fact that this matter was allowed to go on so long, apparently unconscious that he could have obtained relief. This case occurred about twenty-five years ago. I could call attention to a great number of instances, but it would be but an iteration of the same story. You see a number of deformities walking around the streets of this city; these people must have some friend in our profession that could advise them, and, should they not be able to get the necessary attention anywhere else, at least send them to the Charity Hospital.

The literature of the profession is full of the many wonderful restorations of lost parts and in relieving the mutilations occasioned by injuries in this war. Even if you have not read about them you could not help but hear of them, so there can hardly be any reason why such conditions could exist with the present lights before us.

DISCUSSION

Dr. Provosty.—Emphasizing the necessity of having such pictures taken correctly, I would recite a case occurring some years ago in my service at the Charity Hospital. A young woman had come in with an enormous tumor of the upper jaw. On inspection I made a diagnosis of sarcoma, and the x-ray taken at the Charity Hospital confirmed the diagnosis. I was unwilling to do a disfiguring operation without better evidence of the existing condition. I had a picture taken again outside of the hospital, and the new picture showed an enormous tooth in the antrum, which was removed, and the patient recovered rapidly without disfigurement.

Dr. Gessner.—I should like Dr. Friedrichs to explain why the impacted tooth did not show in the skiagraph he had taken. Further, I should like to know whether impaction is more common in the upper than in the lower jaw. Some twenty years ago I removed an upper-jaw osteoma in which was embedded a cuspid tooth; the gap made was filled with an obturator made by a student of the New Orleans College of Dentistry.

Dr. Guthrie.—The question is not put to me to answer. However, I will undertake to tell Dr. Gessner the reason why the radiograph did not show the unerupted tooth. The reason is that the radiograph was not taken at the proper angle. There is no reason why the picture should not show an unerupted tooth. If the radiograph is taken at the right angle it will show very well the shadow of an unerupted tooth.

Dr. Friedrichs (closing).—In answer to Dr. Guthrie, I would say that possibly the angle in which the picture was taken may explain why it did not show the two impacted teeth.

In reference to Dr. Provosty's case, he need not have feared the resulting deformity, as any deformity occasioned by the removal of any of the fixed part of the face can readily be corrected.

In reference to the frequency of impacted or unerupted teeth in the lower and upper jaw, the relative frequency, I would suppose the lower wisdom tooth represents the most frequent tooth in which this condition occurs; with this exception, the lower jaw seems to be free from complications of this kind. In the upper jaw all the teeth, centrals, laterals, cuspids, bicuspid, and molars, are all at times involved, the cuspid leading in frequency. I do think the dental plate would not have shown the bicuspid tooth in my case, as it was above the alveolar process and in the maxillary bone. The dental film did show the cuspid.

FISTULA OF THE PAROTID IN WAR WOUNDS OF THE FACE AND JAWS*

BY PERCIVAL P. COLE, M.B., CH.B., F.R.C.S., ENG.

*Honorary Surgeon, King George Hospital; Assistant Surgeon, Cancer Hospital;
Late Hunterian Professor, Royal College of Surgeons, Etc.*

WITH A NOTE ON RADIATION TREATMENT BY ROBERT KNOX, M.D.

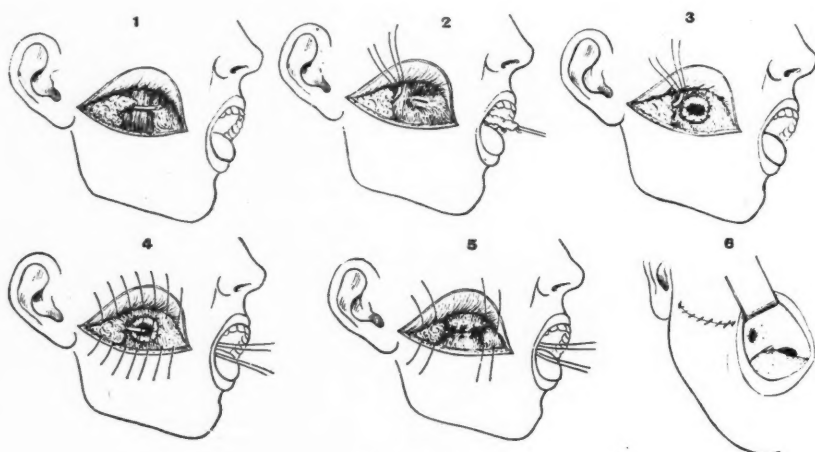
Radiologist, King's College Hospital, Cancer Hospital, Etc.

FISTULA of the parotid gland or its duct is a relatively rare complication of facial wounds. Throughout a period of nearly four years, during which time wounds of every grade of severity have come under my care, only some 16 cases have been noted. These fistulae may be conveniently classified thus:

*Reprinted from the Lancet, London, June, 7, 1919.

mucous membrane stitched to the deeper margins of the wound, as shown in Fig. 3.

Through the aperture thus created the stay sutures were passed and the duct was gently pulled into the funnel-shaped extension of the oral cavity. The duct was buried in the extension and the extension cut off from communication with the exterior by catgut sutures passed as illustrated in Figs. 4 and 5. The skin wound was then sewed up, drainage being established through a small stab incision. Each stay suture through the duct was then made to take a good hold of mucous membrane inside the mouth, so that when tied the duct was secured in place (Fig. 6). In both cases slight suppuration with a discharge of saliva occurred about the tenth day. Communication with the mouth had, however, been well and visibly established and firm healing occurred in a few days. Both cases were kept under observation for three weeks and were then discharged as cured. No branches of the facial nerve were identified and no facial paralysis occurred.



Figs. 1—6.

TECHNIC OF RADIUM EXPOSURES FOR PAROTID FISTULA

The treatment in all the cases dealt with was the same; namely, exposures to a penetrating radiation from 200 mg. of radium contained in platinum tubes of a thickness of about $\frac{1}{2}$ mm.; in addition 3 mm. of lead were exposed to cut off all or nearly all of the hard beta radiation and allow of the gamma radiation being used. The radium tubes were enclosed in rubber tubing and in addition several layers of lint were used on the skin to cut off any secondary radiations from the metal filters. An exposure of three to four hours was given to each skin area. In one case each area received six hours' exposure. The variation in the time factor was estimated on the condition of the tissue in each case, those with considerable induration of tissue receiving longer exposures than the others.

No marked reaction was obtained in any of the cases treated. In a number of patients x-rays were combined with the radium treatment, small doses being given at short intervals; the x-rays were filtered through 2 mm. of aluminum.

DEPARTMENT OF DENTAL AND ORAL RADIOGRAPHY

Under the Editorial Supervision of

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It is the object of this department to publish each month original articles on dental and oral radiography. The editors earnestly request the cooperation of the profession and will gladly consider for publication papers on this subject of interest to the dental profession. Articles with illustrations especially solicited.

THE SYSTEMATIC DEVELOPMENT OF X-RAY PLATES AND FILMS

BY LEHMAN WENDELL, B.S., D.D.S., MINNEAPOLIS, MINN.

*Chief of the Photographic Work, Instructor of Prosthetics and Orthodontia,
College of Dentistry, University of Minnesota.*

CONSIDERING the widespread use of radiograms, one notes with surprise how few of the countless numbers produced are completely satisfactory. Many of them bear evidence of having been taken with a faulty or inferior machine, others have been taken at the wrong angle and are so badly distorted that they do not present the anatomical relations at all truthfully; the vast majority, however, are bad from a photographic point of view, and a film or plate that is bad photographically is more or less unreliable for diagnostic purposes. So universal is this last named fault that there can be no doubt but that the majority of operators fail in one or more of the fundamental principles of photography, and the efficiency which their knowledge of radiography should give them is lost by faulty photographic work. Many seem to think that proficiency in handling the x-ray machine is all that is necessary, the development of the exposed film or plate being so simple and automatic a process that it would be foolish for the operator himself to waste any time over it. But that is a mistake. It is like a man who, knowing nothing about photography purchases a very expensive camera, in the belief that the anastigmatic lens and the elaborate accessories will compensate for his lack of knowledge of photography.

METHODS OF DEVELOPMENT

Three methods of developing a photographic plate are in common use. The first may be called the "tray, or visual inspection, method," the second the "factorial method," and the third the "tank, or stand, method." The factorial method is gradually being superseded by the tank method, and I shall therefore limit this brief article to the tray and tank methods.

TRAY, OR VISUAL INSPECTION, METHOD

By the tray, or visual inspection, method is meant a method wherein the worker watches the plate or film as it develops, and judges the completion of development by the appearance of the negative.

It is a curious fact that this method is practiced by two classes of workers—the most advanced, and the least advanced. It is the system that some of the most experienced photographic workers employ, and it is the system by which the veriest tyro in matters photographic will try to coax an image out of a reluctant plate. It is the system almost universally employed by radiographers, because of its seeming simplicity. However, the simplicity is only apparent, not real. In fact, far from being a simple method; it is the most difficult of all methods, and to master it requires first of all a thorough knowledge of photography and



Fig. 1.



Fig. 2.



Fig. 3.

secondly years of practical application. The worker who follows these methods places the exposed plate in the developing dish, and flows the developer over it, or in the case of small dental films, the tray is filled with the solution and the films submerged in it. From time to time the plate is removed from the dish, and an attempt made to look through it by the light of the red lamp, and to form a judgment as to how far development has proceeded. This sounds like simplicity itself, and so it is when you know how to do it, but until you do, it is the reverse. You will find that considerable experience is needed before you can with certainty decide that a negative is or is not fully developed. The negative is practically opaque before it goes through the fixing bath, and even if it were examined in broad daylight it would be difficult to judge the density.

The most glaring mistake that the radiographer makes when he employs the tray method is that he pays not the slightest heed to the temperature of his

solution. He fills his tray from a bottle of stock solution, and, for all he knows, the temperature of the bath may be 60° or 70° or 90°. With too cold or too warm a developer he may produce a negative which will appear correct when viewed before the red light, but the finished product will not be correct. For instance, three plates developed at varying temperatures (50°, 65°, 80° F.) can be developed to a point where the opacity will appear to be identical when viewed before the red light, but when these same plates have been fixed, washed and dried, it will be found that only that plate which was developed at 65° F. is perfect, the other two being inferior as regards brilliancy, detail, and gradation.

A comparison of Figs. 1, 2, and 3 will make the point clear. All three films were given the same exposure, namely, two seconds. The films were next developed in solutions of varying temperatures, and in each case development was carried to a point where the opacity seemed correct when viewed before the red light. Fig. 1 was developed at approximately winter temperature (50° F.); Fig. 2 at the normal temperature (65° F.); and Fig. 3 at summer temperature (80° F.). What was the result? Fig. 1 shows a weak image, lacking in brilliancy and detail, and for diagnostic purposes the picture is worthless. Fig. 2, which was developed at a normal temperature, is rich in detail, brilliancy and contrast. Fig. 3 is too dense, it has a decided muddy appearance, and the details are largely hidden in the general opacity.

Owing to the unsatisfactory nature of tray development, and the great temptation not to standardize it, I strongly urge against its adoption. Should the radiographer, however, insist on using this method, there is only one way in which it can be used successfully; that is to *develop for a given length of time at a given temperature*. The best working temperature is 65° F., and the time of development is usually from five to seven minutes, depending upon the developer used.

TANK, OR STAND, METHOD

The tank, or stand, method is the ideal method of developing x-ray plates and films, and no radiographer who has given it a thorough trial will be satisfied with the old haphazard tray method, where the element of chance comes so largely into play. The tank method is probably more practiced by photographers today than either of the other methods. Yet, strange to say, few radiographers have gone to the trouble of acquainting themselves with it, although it is the only method with which the worker not thoroughly skilled in photography can hope to produce uniform results.

Tank development is based on the action of a developer of a given strength, for a given length of time, at a given temperature. The chief reason it gives such splendid results is that the radiographer is *compelled* to know the temperature of his developer in order that he may know when development should be stopped.

The idea is quite prevalent among those not experienced in photography that the tank method can take care only of normally exposed plates, whereas under- and overexposures must necessarily come out of the tank under- and overdeveloped, as the case may be. This idea is erroneous. The old theory that an

underexposed plate should be given a prolonged or forced development, and that an overexposed plate should be given a shortened development is wrong. Let us see why. When an underexposed plate is placed in the developer the image builds up very slowly. The novice is apt to prolong the development for an immoderately long time, hoping to bring out the missing detail, but he forgets that he can not bring out what is not there, or what the light has not impressed on the plate. All he does is to add *density* to the parts that *do* put in an appearance, so that an underexposed plate that has been forced in the developer shows contrast, but lacks detail. In the case of the overexposed plate what is the result? The image flashes up quickly and the whole plate darkens rapidly. The inexperienced workman is apt to remove the plate from the developer too soon, with the result that only the superficial layer of the emulsion has been acted upon, and on fixing he will find the plate very thin and without contrast, and almost useless.

Now, what would happen if under-, over-, and normally exposed plates were developed at the same time in a tank? The underexposed plate would be thin, not too contrasty, and would have all the detail possible. The overexposed



Fig. 4.



Fig. 5.

plate would be dense, but full of detail and gradation. The normally exposed plate would, of course, be normal in every respect. We may then formulate the following rule: *all plates should be developed for the same length of time, regardless of exposure.* It is true that the professional photographer does not follow such a rule, but we must remember that the professional photographer has had years of experience in matters photographic and knows exactly what will happen when he departs from the normal. The radiographer, on the other hand, is not likely to be a skilled photographer and for that reason I strongly recommend that he standardize the development, making it mechanical rather than relying upon his own judgment. Development should therefore proceed for a definite length of time. If that rule is followed, thin negatives will at once indicate underexposure; dense negatives, overexposure, and such negatives should be corrected after development by intensification or reduction.

When a negative has been developed it should, of course, be carefully rinsed and then placed in the fixing bath. Owing to the limited space I can not here go into the question of fixation, but as the process is quite automatic, an explanation is unnecessary. It is also unnecessary in these brief pages to give formulas

for developers and fixing baths because formulas usually accompany chemicals and photographic goods.

Fig. 4 represents a negative which was badly overexposed, then developed by the tray method to a point where the opacity seemed correct, as judged by the dark-room light. The opacity, however, was only superficial, the deeper layer of the emulsion being untouched by the developer, and when the negative was placed in the fixing bath the undeveloped silver bromide was dissolved and finally washed away under the tap. The result is a thin negative, lacking detail, brilliancy and contrast.

Fig. 5 shows a negative which received the same exposure as Fig. 4. In this case development was carried to its logical end and the result was a negative so

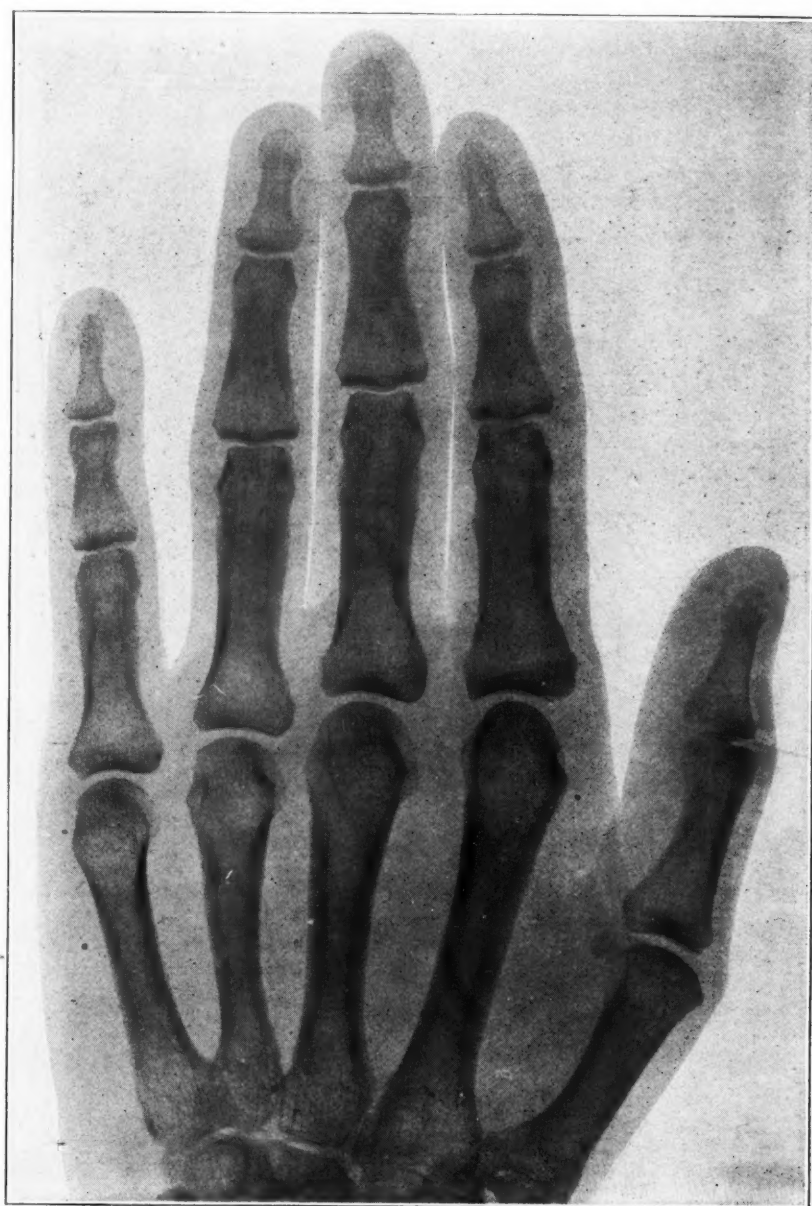


Fig. 6.

dense that transmitted light would scarcely penetrate it. The negative was fixed in the usual manner, then placed for a brief time in the reducing bath described later, and the result was a negative which is normal in every respect.

INTENSIFICATION

Negatives which show detail, but are not dense enough can be intensified in the following solution:

| | No. 1 | |
|-----------------------|-------|------------|
| Bichloride of mercury | | 200 grains |
| Bromide of potassium | | 200 grains |
| Water | | 10 ounces |



Fig. 7.

No. 2

Sulphite of soda
Water

$\frac{1}{2}$ ounce
4 ounces

After the negative is well fixed and *thoroughly* washed, immerse it in No. 1 until it has become thoroughly whitened, and after rinsing carefully, place it in No. 2, leaving it there until full density has been attained.

Fig. 6 shows a print from an underexposed but normally developed negative.

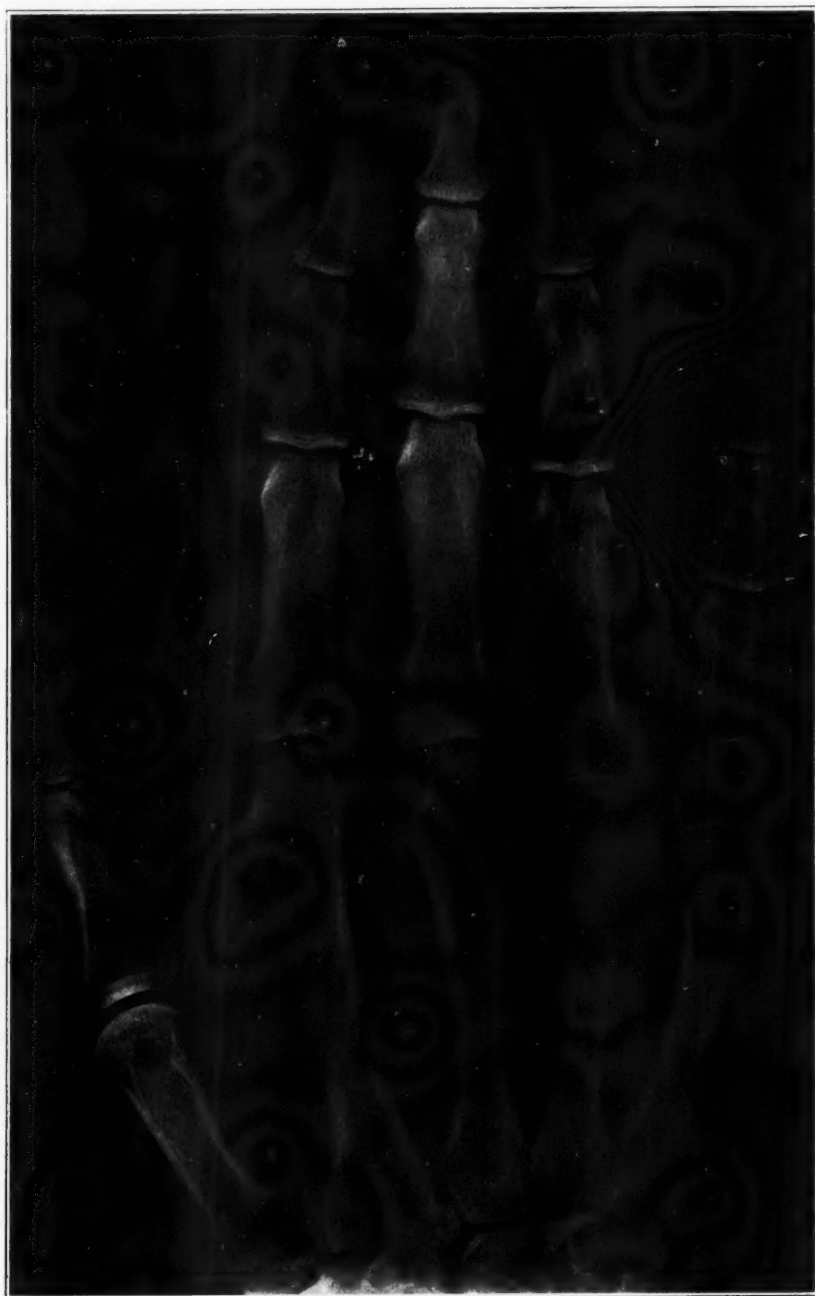


Fig. 8.

Owing to the thinness of the original negative there is a lack of contrast, and the brilliancy so much desired in a plate is largely lost.

In Fig. 7 we have a print from the same negative after intensification. The improvement is marked. The general flatness of the first print has disappeared and an added brilliancy is the result.

REDUCTION

Negatives which are too dense all over, due to overexposure, or to overexposure and overdevelopment, should be reduced with Farmer's reducer, as follows:

| | | |
|----------------------|----------|-----------|
| | <i>A</i> | |
| Water | | 16 ounces |
| Hyposulphite of Soda | | 1 ounce |



Fig. 9.

B

| | |
|----------------------------|-----------|
| Water | 16 ounces |
| Red Prussiate of Potassium | 1 ounce |

As solution *B* is affected by light, the bottle containing it should be of amber color or wrapped in opaque paper.

Mix for immediate use:

| | |
|----------|----------|
| <i>A</i> | 8 ounces |
| <i>B</i> | 1 ounce |

Use in subdued daylight

The negative can be transferred to this solution direct from the fixing bath without rinsing. The action is very rapid and must be watched closely. To avoid streaks, always rinse the negative before holding it up for examination. When sufficient reduction has taken place, wash the negative thoroughly in running water.

Fig. 8 represents a badly overexposed but correctly developed negative. The opacity is so great that the details are practically hidden, while the flesh tones have entirely disappeared.

Fig. 9 shows the same negative after reduction with Farmer's reducer. The negative is now rich in detail. The cancellous structure of the bone is clearly brought out, even the finger nails and delicate folds of the skin are to be seen. (This figure is imperfectly brought out in reproduction.)

DENTAL INFECTIONS FROM THE VIEWPOINT OF THE ROENTGENOLOGIST*

BY ROSCOE L. SMITH, M.D., LINCOLN, NEBR.

AS a roentgenologist, it has been of great interest to review my experience in connection with dental infection during a period of over five years and note the change that has taken place among physicians, dentists and laymen.

At first the roentgenologists were blamed or largely discredited for placing so much importance on the findings of the so-called periapical abscesses and other infective processes about the teeth.

This indifference, if I may term it such, has been replaced by a very different attitude on the part of doctors of medicine and dentistry and incidentally by the laymen themselves until at the present time it is an accepted fact, proved many times in everyone's experience that these so-called focal infections do cause and are responsible for a great many serious disturbances experienced by patients afflicted with this type of disease.

*Read before the joint meeting of the Lancaster County Medical Society and the Lincoln Dental Society, February 15, 1919, Lincoln, Nebr.

Although it is unjust and unfair to blame all of the systemic disturbances on tooth infection, they certainly are responsible for a large, generous portion of the disturbance. The tonsils and the accessory sinuses are also important etiologic factors and to my mind share the responsibility equally with dental infection, with the exception that they are more apt to cause acute symptoms and thus manifest themselves at a much earlier stage and therefore receive radical treatment.

In medicine, and I presume in dentistry also, the pendulum of popular opinion swings slowly from unbelief to the full acceptance of the most radical opinion and later drops back to a more conservative stride.

To my mind the past few years have taken us through just such changes, yet there is still much difference in opinion and I feel that we are still far from a standard.

The difficulty in carrying out or standardizing methods and opinions on this subject, I believe, is due principally to the different interpretation of these pathologic changes, and the interpretation of these changes must be based on anatomy and pathology.

One individual may give an opinion on a roentgenogram, as normal unless he finds a large periapical shadow. The processes may be largely destroyed, and yet, are not taken into consideration. If there is but a small area he may think the area too small and insignificant to cause disturbance in physiologic functions. Another individual may be an extremist of the opposite type and say that all devitalized teeth, whether properly filled or not, are infected teeth and are possible sources of systemic disturbances on the theory that the tubuli in the dentine are devitalized and infected.

To state my viewpoint as a roentgenologist and from a roentgen standpoint, I believe that all devitalized teeth that show definite areas of osteomyelitis at the apex; that show definite granuloma or infection and death of the peridental membrane from below upward; teeth with normal or devitalized pulp that show extreme destruction of the peridental membrane with marked receding of the gingival border and marked destruction of the bony processes, in patients suffering from systemic disturbances, are a menace, and the probable etiologic factor in their particular case.

ABSTRACT OF CURRENT LITERATURE

Covering Such Subjects as

ORTHODONTIA — ORAL SURGERY — SURGICAL ORTHODONTIA — DENTAL RADIOGRAPHY

It is the purpose of this JOURNAL to review so far as possible the most important literature as it appears in English and Foreign periodicals and to present it in abstract form. Authors are requested to send abstracts or reprints of their papers to the publishers.

Cleft Palate and Harelip. W. L. Shearer. The Nebraska State Medical Journal, 1919, iv, No. 4, p. 106.

With special reference to the treatment of this distressing deformity, it must be borne in mind that the palate is one of the most important organs of speech, and on account of its direct attachment to the larynx, constitutes a most valuable factor in voice production. The author points out that the articulation of consonant sounds is very difficult for children afflicted with cleft palate, in proportion to the extent of the gap. Judicious treatment must aim not only to closure of the palate, by far the most important point consisting in the creation of a flexible resilient palate, as required in phonation.

Infants with complete cleft palate and either single or double harelip should be treated in three steps, as follows: (1) Bone surgery, if possible within the first month. (2) Lip and nostril, six weeks after the bone operation, or earlier if the bone operation has proved a success and the splints have been removed. (3) Soft palate, about the fourteenth to sixteenth month, preferably. The bone surgery should be done early before ossification has advanced, the bones being more easily moved to the position desired, while the shock to the patient is less. At birth the bones are about half organic matter and easily bent. When there is double cleft with premaxillary protrusion, this premaxillary bone must never be excised. A deformity follows which is by far greater and more difficult to repair than that originally presented; it is in fact a calamity that can not be repaired. With the excision of the premaxillary bones go the tooth germs, and the child is forever missing temporary as well as permanent teeth. They must be put back in position to form a normal arch. The success of the subsequent operations depends on the closure of the cleft of the bones. Under an appropriate technic, the physiologic functions of the palate are restored. In operating on the lip and nostrils, as well as the soft palate, great care should be exercised not to traumatize the tissues more than is necessary, as sloughing, particularly in the soft palate is apt to follow. Lateral incisions in the soft palate are unnecessary and should never be made, because in so doing the tensor palati muscle and nerve are very likely to be severed, and once severed do not reunite. Following in the

wake of this unfortunate procedure is deafness, owing to the fact that by traction in the act of swallowing and speaking the tensor palati muscle dilates the pharyngeal orifice of the eustachian tube. Permanent sutures left in the mouth at the completion of any of these operations should be silver wire, lead plates, and horse hair, for the reason that they do not absorb the saliva which is constantly contaminated with different forms of bacterial life.

Some Interesting Cases in Oral Surgery. I. Morton. The American Journal of Nursing, 1919, xix, No. 9, p. 678.

From her experience in the office of an oral surgeon and radiologist, the author reports some instructive cases which show the importance of radiography in oral conditions which have affected the general health of the patient. In the case of a young man who had been treated several years for tuberculosis, but had never entirely regained his health, radiography revealed a large granuloma at the end of the root of two broken off teeth; the removal of the granuloma was followed by rapid improvement and restoration of working capacity. In another case, an unrecognized dental anomaly resulted in ocular disturbances with severe headache. Radiography showed an impacted upper left bicuspid, meaning that a fully developed tooth was embedded in the bone, lying in a horizontal position above the roots of the other teeth. The condition of the eyes was relieved after the removal of the offending tooth. A similar observation, showing an impacted eye tooth embedded deeply in the bone, was made in the case of a young woman suffering from a series of nervous disturbances all of which subsided after the removal of the tooth under general anesthesia. In still another case, a partially developed second deciduous lower molar remained embedded in the bone and the second permanent bicuspid was forced into a tipped position by the development of the first permanent molar, so that the partially developed deciduous tooth was lying under the tipped permanent second bicuspid, and the molar rested on the bicuspid, making the three teeth lie one above the other. This decision, as reached after radiologic examination, was verified when the teeth were taken out, together with a considerable amount of necrosed tissue. The patient, a woman in the early forties, steadily improved in health after the performance of the operation, under novocaine conductive anesthesia.

The Occlusion of the Palatine Opening After Resection of the Upper Jaw. M. H. Morestin. Bull. et mem. Soc. de chir. de Paris, 1918, xlv, 102.

The reparative operations upon war wounds which persist as large openings between the nasal fossa and the mouth have been suggestive of valuable methods in closing the palatine opening which follows excision of an extensive tumor of the upper jaw. As Morestin believes that it is practically always possible to close off the nasal fossa from the mouth, he advises occlusion of the palatine opening as a necessary complement to resection of the upper jaw. If for various

reasons this can not be undertaken immediately after the primary operation, a second autoplasmic operation is usually indicated and possible.

Although the palatine opening which is the result of an operation may be surprisingly reduced in the course of spontaneous cicatrization, in one case which Morestin reports the opening measured as much as 3 to 5 centimeters from front to back and 2 to 4 centimeters across. Morestin divides the plastic operation which he performs in the cases referred to him a few months after the primary operation into four stages: (1) The refreshing of the circumference of the opening; (2) the dissection and the freeing up of the mucous membrane of the cheek; (3) the detachment of the palatine fibromucosa, and (4) the suturing. A knife is used for refreshing the outline of the opening; the fibromucous ring bordering it may either be entirely removed or divided. A margin of tissue left on the inner side of the opening, refreshed and turned toward the mouth, will later come in contact with the raw surface of the mucous membrane of the cheek. The freeing up of the mucosa of the cheek is begun at the very edge of the opening for refreshing and extends forward to the gingivolabial groove and backward toward the posterior portion of the buccal vestibule; great care must be taken to avoid slipping the instruments into the thick part of the cheek. When the flap is large enough so that it can be drawn to and even beyond the opposite edges of the opening, the fibromucosa near the opening is loosened, and as far as possible, detached. The suture with "Florence" horsehair in a small bent needle of Reverdin, drawn from the back forward, offers no difficulties if the freeing up has been sufficiently liberal. The operation is most satisfactorily carried out under a local anesthetic.

In two of the four cases of reparative operations which Morestin reports, the opening was closed completely upon the first interference; repeated operations, during each of which a flap was freed from about the mouth of the opening and turned back into the opening into the nose, were necessary to close the openings in the other two cases. In these latter cases, the operator's first experience with this method of freeing the mucous membrane from the cheek, he did not make the flaps large enough.

Morestin attempted closing the palatine opening immediately after the resection of the upper jaw for malignant tumors in three cases. Unfortunately the general condition of two of the patients was so poor that they died within less than twenty-four hours; the plastic operation had, however, prolonged the primary operation but a few minutes, and the results indicated by the union of the mucosa of the palate and the cheek were very satisfactory.

Morestin's method of closing the opening which persists after resection of the upper jaw does not interfere with the wearing of an apparatus designed to lessen the facial depression; the metallic plates used to distend the mucosa of the cheek are changed for thicker and thicker ones until the patient's mouth has become adapted to such an apparatus. The author emphasizes his belief that the reparative operation may be undertaken, in the majority of cases, immediately after the primary operation.

Extraction of the Six-Year-Old Molars. L. Mudie Petrie. *British Dental Journal*, 1919, xl, No. 11, p. 405.

The author emphasizes in the first place that the six-year-old molar is such an important factor in determining the positions of the permanent teeth and takes such a permanent and useful part in mastication that its removal is a very great loss whether irregularity exists or not. Secondly, where irregularity does exist, almost every case can be traced to causes which occur in early childhood, and that it is an absolute fallacy to wait beyond the eighth year before applying treatment for correction. Lateral growth of the jaw stops at the eighth year, and if slow expansion is to be commenced for the purpose of helping the jaw to grow, it should be done before eight years of age. The damage is done long before the twelve-year-old molar is in place. The natural and logical method is to stimulate the bone-growth before maturity sets in. To remain inactive until the second permanent molar erupts for the purpose of extracting the first, is not logical, especially when we know that the condition is daily becoming worse, and that the extraction itself will contribute to further dislocation of articulation. In certain cases, however, extraction is imperative, and it must be resorted to: (1) In open bite, which can be considerably corrected in some bad cases by the extraction of the first molar. (2) In serious pathologic conditions where the preservation of the tooth would be impossible, for example, abscess, tumors, etc. (3) In anomalies of the teeth themselves, such as peg-shaped and abnormal teeth or in germinated teeth where they do not fulfill their proper function. (4) In cases where the upper or lower teeth have already been extracted. In summing up, the author says that extraction of the six-year-old molars for the purpose of obtaining an alleged immunity from caries, and for some vague reason of gaining room in the dentition, should be dismissed as an unestablished, inconsistent, and useless theory. Further, that extraction for the relief of overcrowding in most cases is contraindicated, especially in the early stages, and should never be adopted as a principle. Finally, extraction is absolutely imperative only under conditions similar to those already mentioned.

Macroglossia and the Simian Protrusion and Separation of the Teeth in the Course of Dementia Precox. Bayard Holmes. *Chicago Medical Recorder*, June, 1919, xli, No. 6, p. 222.

The deterioration of our insane adolescents is often suggested by the deformities of the face and senescence of attitude. It is not possible to mention more than one of them in connection with one patient—a well educated and regular featured young man whose photographs of a few years ago exhibit a countenance of real comeliness. Now the teeth are separated from one another and the incisors on both jaws everted and thrust forward. The tongue is greatly enlarged. The molars and premolars have produced deep indentations on the side of the tongue. Even when the mouth is open and the tongue protruded the greatly enlarged and thickened tongue seems to fill the roof of the mouth. There

is an even, thick feeling to the tongue with no enlarged glands, no tenderness, and no abnormality of the mucosa which could account for the condition.

This thickening of the tongue and protrusion of the teeth is observable in a large proportion of dementia precox patients, and gives them the unattractive, if not repulsive, appearance they often present. It is not always an early symptom.

Macroglossia is a common symptom of finding in mongolian and cretin idiots. It also appear in certain syphilitics. Its various forms and the histologic conditions found in each have been described by Butlin and Spencer and by a great number of histologists (v. Cat. Surg. Gen. Library, under heading, tongue). So far as my own study of the literature has gone, no one has called attention to this condition as a symptom of dementia precox.

In many infectious diseases macroglossia or temporary enlargement of the tongue is common enough. It is well recognized by dentists as a cause of prognathism and separation of the teeth. It seems but natural that the toxemia of dementia precox should produce enlargement of the tongue and the simian face, especially in emaciation, which was looked upon by our psychiatric ancestors as a stigma of mental disease. The very fact that the simian prognathism is a traditional stigma of mental deterioration speaks for the possible frequency of macroglossia.

Inflammatory Affections of the Visual Organ Due to Dental Disease. Wirtz.
Revue Tri mestrielle Suisse d'Odontologie 1918, xxviii, No. 1, p. 78.

Infectious germs from chronic unrecognized dental affections may reach and inflame the eyeball alone, without demonstrable involvement of the surroundings. Three such cases have been reported in the literature. The author's observations during seven years, with special reference to the etiology, serve to show that intraocular disease of dental origin is relatively frequent, especially in the uvea. Among metastatic eye diseases due to affections of the teeth, he describes suppurative chorioiditis, with subsequent panophthalmia, suppurative iridochorioiditis with subsequent atrophy of the bulb. The following eye diseases may be caused directly by dental troubles, and are the most important because they furnish positive proof of the part played by dental inflammatory processes in the origin of many ocular affections: Acute and subacute iridocyclitis; exudative central chorioiditis with mild optic neuritis; phlebitis of the retina. Eye diseases caused indirectly by dental affections include: Parenchymatous keratitis; bilateral chronic iritis; chronic unilateral blepharoconjunctivitis with marginal keratitis.

It results plainly from the author's observations that dental diseases are capable of involving the eyeball and giving rise to internal and external ocular inflammations. The truth of this statement is illustrated by the successful results of dental treatment. The removal of the supposedly causative processes in the roots of diseased teeth at once modified the acute eye affections which had resisted all previous treatment, rendering the further course short and favorable. In all cases, a permanent cure was obtained within eight to twelve days. These eye diseases were in part caused by the inflamed roots alone or directly or their origin was indirectly favored by the existing radiculitis. The

most common direct and dental ocular inflammations are diseases of the uvea, especially of the iris: (1) Acute iritis with involvement of the ciliary body and considerable exudation into the refractive media. These inflammations develop abruptly and destroy vision within a few days, down to light perception. The customary palliative treatment has no influence upon the course. (2) Chronic iritis is usually limited to the diaphragm of the iris and has only a slight tendency to exudation, so that the refractive media are not rendered opaque even after the trouble has lasted for years, and vision is not seriously affected. The course is characterized by a large number of recurrences, which usually yield to palliative measures.

These eye diseases are undoubtedly infectious, due to bacteria derived from the root foci, and reaching the eye from the diseased tooth by way of the blood stream, more particularly the veins. In the author's cases of acute iritis, the oral conditions were very bad, many teeth were destroyed, ached periodically, and were filled with decomposing remnants of food. The patients with chronic recurrent iritis had better-kept and properly treated diseased teeth. The trouble in the last group of cases is chiefly referable to the customary method of conservative dental treatment. Two essential factors in the origin of dental internal eye diseases were found in the form of artificial or occasional closure of an infectious chronic root process also toward the outside, and in recrudescence of the radiculitis through injurious influences, for example, a chill or a change in the weather. Next, the spreading of infectious dental disease is favored by gold caps over diseased teeth, clasps which irritate the root, and badly fitting prostheses. Chronic dental affections may act as a partial cause of chronic eye disease. A syphilitic or tuberculous virus may act as the determining cause, while the dental process constitutes a preparatory cause for all recurrences.

Local Anesthesia in Children. *American Journal of Surgery*, 1919, xxxiii No. 5, p. 121.

At first blush, the application of local anesthesia for operations upon children theoretically seems almost hopelessly contraindicated. That is why we are much interested in a recent report of Farr (*Interstate Medical Journal*, Feb., 1919), who cites 77 cases, including operations upon almost every part of the body, in which this method proved successful; in only seven was it considered necessary to administer inhalation anesthesia. Farr says that relatively speaking novocain is as safe in the child as in the adult. Moreover, the psychic element is not so important in children as in adults. In very young children, restraint may be necessary, but in the majority of children over four, no mechanical restraint is necessary. Very often a bribe goes a long way in maintaining quiet during the operation. In only one case did postoperative vomiting occur, and this was in a patient with hypertrophic pyloric stenosis. It is absolutely necessary to be extremely refined in surgical technic when operating upon children under local anesthesia; rough dissection and manipulation is outlawed; Farr appropriately designates the method as "Healthy." This is especially true in the manner of handling the retractors. They must be slowly and carefully placed and not allowed to slip out of the wounds when the anesthesia is successful. The

inspection of the abdominal contents is more perfect than under inhalation anesthesia, resembling that seen in the cadaver, when all the organs are flaccid. Vertical traction and tilting are used to bring the organs into view. Farr describes his method of infiltration in detail. Complete filtration of all the tissues is necessary before beginning the operation. The most important point, aside from this, is the avoidance of pain in making infiltration. This is done by making all secondary wheals from beneath, and by making subdermal rather than intradermal injections for the anesthesia of the skin. The fluid should advance into the tissue just ahead of the needle.

Local anesthesia is slowly robbing general anesthesia of much of its dangers, and if children, in whom it has hitherto seemed contraindicated, come into the field of applicability of local anesthesia, an important surgical advance has been attained.

Oral Bacteria Exhibiting Streptobacillary Characters. Ch. L. Kelsey. *British Dental Journal*, 1919, xl. No. 10, p. 373.

The streptobacillus here considered was first isolated from a case of pyorrhea alveolaris, and being found in a number of subsequent cases it was decided to make it the subject of the present research; the objects being to find the frequency of its occurrence in oral lesions, more particularly in pyorrhea alveolaris and associated conditions to decide the most favorable liquid and solid media for its culture, to find which of the disinfectants in use in the mouth would destroy the organism, in what strength it must be employed, and the length of time it must be in contact with the organism. The general conclusions reached were as follows: The organism is a gram-positive, nonliquefying, non-motile streptobacillus. Its presence occurs in pyorrhea alveolaris, gingivitis, pulpitis, tonsillitis, pharyngitis. It fails to grow on many of the ordinary laboratory media. It prefers a medium that has been enriched by the addition of animal albumin and that has an acid reaction. Ascitic agar and ascitic broth give the best growth. Saliva causes agglutination of the streptobacilli. The organism exhibits remarkable resistance to the action of many disinfectants, but is rapidly killed by iodine, that being the most efficacious and convenient disinfectant for use in the mouth. Oil of cloves, lysol, and tincture of myrrh also rapidly destroy it, but they are not so favorable for oral treatment. The pathogenicity is not fully determined, but the serum of animals injected with the streptobacillus contains specific antibodies that cause agglutination of the organisms. Antistreptococcal serum has no agglutinating effect upon the streptobacilli.

Cause of Dental Caries. Stannus. *British Dental Journal*, Sept. 15, 1917 xxxv, 729-744.

Although considerable difference of opinion exists with regard to the influence exerted by oral sepsis on the general health, there is no disagreement as to the harmfulness of dental caries. There may be skepticism regarding the statements of well-known medical practitioners that oral sepsis is the *fons et*

origo of the majority of systemic diseases, but there can be no denial of the fact that dental caries is a serious condition, tending to ill health. The inability to masticate food properly when dental caries is present is sufficient in itself to demonstrate this. When a person can not chew food thoroughly, digestive disturbances may occur not infrequently. It is generally supposed that people leading a primitive life suffer little with their teeth. This is true to a large extent. However, even natives of Africa living in a cleanly, natural manner are by no means immune to dental caries. Dr. Stannus examined the entire population of a series of villages in the West Nyasa District of Nyasaland. Their diet was chiefly cassava made into porridge and some eaten raw, other constituents being ground nuts, fish, a little maize or millet, flour porridge, green vegetables and bananas. Of 1,311 persons examined, 1,038 of whom were adults, 8.6 per cent showed caries. Stannus concluded that native Africans have no immunity to dental caries, and that the same causes and predisposing conditions are the source of caries among them as among people of civilized countries. The small comparative incidence of caries among natives living under natural conditions is due to the absence in large proportion of those predisposing conditions found in civilized races, irregular dentition, lack of proper mastication, and want of the use of the teeth, owing to the eating of soft foods. It has been urged by many that one of the main causes of dental caries is the eating of food that requires little mastication, and that consequently dental caries has increased greatly because in civilized countries so much soft food is consumed. Dr. Harry Campbell of London may be termed the high prophet of this propaganda, and he preaches in and out of season of the injury to the teeth and to the health done by eating "pappy" food. The teeth were intended to be freely used in the mastication of hard food. When they are not so used they tend to decay, and the general health suffers.

The Normal and Pathological Histology of the Mouth. Volume II. Pathological Histology. A. Hopewell Smith. Textbook, Blakiston & Co., Philadelphia, 1918. Editorial in *Annali di Odontologia*, 1919, iv, No. 2, p. 40.

An editorial in the Italian monthly periodical calls attention to the recent publication of the second volume of an important contribution to odontologic literature by the able teacher of dental histology, pathology, and comparative odontology, in the University of Pennsylvania. The book is divided into three parts, pathologic histology of the dental tissues, of the oral tissues, and of the extra-oral tissues. In the first and most important part, the author discusses in detail the histopathologic conditions of the enamel, dentin, cement, dental caries, diseases, traumatic lesions, and degenerations of the dental pulp. A special chapter deals with the histopathology of the dental tissues in pyorrhea alveolaris. The second part brings a description of all the pathologic conditions of the gums, palate, maxillary antrum and maxillary bones, terminating with a fine chapter on oral microbiology. The third part deals with the development of teeth in teratomatous tumors.

Droplet Infection and Its Prevention by the Face Mask. G. H. Weaver.
The Journal of Infectious Diseases, 1919, xxiv, No. 3, p. 218.

Droplet infection comes into play whenever an individual with pathogenic organisms in the mouth gets into close contact with another individual. Sneezing and suppressed coughing are most apt to produce abundant droplet spray. Gauze will filter bacterial spray from air. Its efficiency is in direct proportion to the fineness of mesh and number of layers employed. Three layers of gauze with a mesh of 40 threads or more will remove almost all bacteria-carrying droplets. Occasionally fine droplets pass through. Gauze masks appear from clinical data to prevent infection through mouth droplets. They are useful when worn for protection by attendants on the sick, and also when worn by the infected individual to prevent contamination of his surroundings. The use of masks should not lead to neglect of measures calculated to prevent transfer of infectious materials by other means than by droplet spray.

The nurses in the Durand Hospital of the John McCormick Institute for Infectious Diseases, Chicago, now use masks made of three layers of absorbent gauze with a mesh of 44 by 40 and are instructed to wear two superimposed masks, making six layers of gauze, when caring for cases of virulent infections when secretions are abundant. A considerable reduction in cases of rhinitis, tonsillitis, and pharyngitis among the nurses has been noticed since masks have been worn.

Dental Infections in Children. A. L. Smith. The Medical Press, 1919, clxxxi, No. 4, p. 491.

Upon the basis of personal experience, the author emphasizes the common neglect of peridental infections in children, shown by the absence in the medical literature of a report upon the organisms present in these cases. This material comprises 109 cases of peridental infections, 4 secondary fistulas, 8 gingival abscesses, 1 abscess in the roof of the mouth, and 1 infected submaxillary gland. The children's age ranged from two and a half to eleven years. The following is a table of the organisms and their number, found in the 109 cases of peridental infections:

| | |
|---|----|
| <i>Streptococcus hemolyticus</i> | 27 |
| <i>Streptococcus pyogenes</i> | 19 |
| <i>Streptococcus viridans</i> | 2 |
| <i>Staphylococcus pyogenes citreus</i> | 9 |
| <i>Staphylococcus pyogenes aureus</i> | 37 |
| <i>Staphylococcus pyogenes albus</i> | 7 |
| <i>Bacillus pyocyaneus</i> | 1 |
| <i>Diplococcus pneumoniae</i> | 18 |
| <i>Micrococcus catarrhalis</i> | 4 |
| <i>Bacillus fusiformis</i> (Spirochete Vincenti) | 1 |
| Diphtheroid bacillus | 3 |
| Sterile | 8 |

All streptococci were injected into rabbits, intravenously, with the hope of finding that they might have a selective action upon the dental tissues, but in no case was this found to be true. In 48 injected rabbits, the kidneys showed multiple abscesses 5 times, the cardiac muscle one, the brain tissue once, and the joints 4 times. In each case the streptococcus was recovered. This series of 48 accordingly includes 11 metastatic infections causing pathologic lesions far removed from the original focus. This is such a high percentage that these dental infections in children can not be lightly regarded. Children's teeth, infected as these are, must be extracted, if the focus can not otherwise be sterilized and this rarely can be accomplished. Though many dentists are of the opinion that premature extraction of deciduous teeth may result in the retardation of the development of the dental arch and be the indirect cause of malocclusion of the permanent teeth, the author is convinced that these infected areas, as well as those in other parts of the body, must be eradicated. While this may be one of the causes of malocclusion, it is a lesser evil than the constant absorption of infected material from the peridental area, which may be the etiologic factor in embolic diseases of other organs of the body, as shown experimentally in this series by the high percentage of this type of infection.

Oral Prophylaxis in Its Relation to Preventive Dentistry. A. H. Merritt.
The Dental Outlook of the Allied Dental Council, 1919, vi, No. 6, p. 169.

The most potent instrument at our command for the prevention of dental caries is mouth cleanliness. Dental caries may be defined as an acid fermentation taking place upon the surface of enamel due to the peptonizing influence of microorganisms. It is obvious that this phenomenon can not take place upon a clean and polished surface, that it is necessary for the organisms of caries to attach themselves to the surface of a tooth and remain there undisturbed for a period of time in order to produce decay. This is clinically confirmed by the fact that the labial and lingual surfaces of teeth are less susceptible to caries than are the proximal surfaces, although these surfaces are not intrinsically more resistant. The explanation is that the organisms of caries are not allowed to remain on these relatively clean surfaces long enough to effect their solvent action. If the susceptible areas were kept as clean as these more exposed surfaces they would be equally free from caries, a service incomparably greater than any which may be achieved through restorative dentistry.

As a preventive of pyorrhea, oral prophylaxis is even more effective than in caries, in that it keeps the mouth clean and through the stimulating effect of vigorous brushing, induces healthy circulation in the supporting tissues of the teeth. Probably most of the cases of pyorrhea which find their way into the hands of the periodontist would never have developed had oral prophylaxis been intelligently observed. No disease in the mouth is more easily prevented, none more difficult to cure. The vast train of diseases which have for their causes the infections associated with nonvital teeth and pyorrhea alveolaris can be prevented by proper application of the principles of oral prophylaxis.

On the Nerve End Cells of the Dental Pulp. L. Howard Mummery. *Proceedings of the Royal Society of Medicine*, 1919, xii, No. 3, Section of Odontology, p. 11.

The distribution of the nerves of the dental pulp to the dentine has been described by the author in former communications, demonstrating that nerve fibers actually enter the tubes of the dentine in company with the dentinal fibril and are distributed within the hard tissue of the dentine. According to recent modified methods of investigation, the neurofibrils which arise from the axis cylinders of the medullated nerves of the pulp pass into a plexus beneath the odontoblasts, but at the lower margin of the odontoblast layer, the fibers of this plexus are connected with a definite layer of nerve cells. These cells are more or less stellate in form, with a distinct nucleus. They are arranged in groups situated at fairly even distances from one another. The cells have two sets of processes which, as in the cells of the central nervous system, must be termed "axons" and "dendrons." The branched processes, or "dendrons," which arise chiefly from the lower part of the cell, communicate by synapsis with the fibers of the deep plexus, and they also give off five divisions which surround the odontoblasts, while from the distal end of the cell a long unbranched process or "axon," is given off which passes direct to the dentine and enters the tubule in company with the dentinal fibril. The nerve cells of the pulp thus constitute apparently a peripheral sensory end organ from which the final distribution takes place. Future investigations must ascertain what portion of this nerve distribution consists of trophic fibers and what of purely sensory fibers.

Post-Grippal Paralysis of the Palatine Velum. L. Du Pan. *Revue medicale de la Suisse romande*, October, 1918, xxxviii.

The author was enabled to observe two cases of bilateral paralysis of the velum of the palate. The first case was one of pseudo-meningitis phenomena, followed by paralysis, which lasted fifteen days. In the second case, severe headache and bronchopneumonia were noted; the patient, a child, presented no meningeal or pseudomeningeal symptom, but nevertheless a very mild paralysis of the palatine velum made its appearance. The nervous phenomena in both these cases were caused in the author's opinion by the toxin of the Pfeiffer bacillus, or rather by an endotoxin which is liberated through the dissolving bacteria. This endotoxin is held responsible for determining all the irritative or inhibitory phenomena which have been demonstrated in the various organs, and is claimed to favor the development of other bacteria in the organism.

Ludwig's Angina. Halphen. *Priesse Medicale*, Jan. 7, 1918.

Halphen reports a case of phlegmonous inflammation of the floor of the mouth mistaken for Ludwig's angina and in which recovery was obtained after drainage through the mylohyoid muscle and removal of the wisdom tooth. The latter had been the starting point of the infection. Osteoperiostitis of dental origin is often erroneously labeled adenitis or adenophlegmon. The teeth hav-

ing no lymph canaliculi, the infection, unless a lesion of the mucous membrane exists, always travels from the dental pulp to the bone, thence to the periosteum and the cervicular cellular tissue, forming what Sebileau has termed a periperi-ostitis. Removal of the tooth is generally sufficient to overcome this condition. True Ludwig's angina, which is rare, is characterized especially by the gravity of the general symptoms, the patient succumbing even before pus has collected. It is thus notably different from edema, phlegmonous inflammations, and abscesses of the floor of the mouth, rather frequently met with and amenable to drainage, a well marked collection of pus, always with a putrid odor, being evacuated. In Ludwig's angina the muscles are found sphacelated. Points of resemblance consist of the almost exclusively anærobic bacterial flora, analogous to that of pulpitis and dental caries, and the characteristic situation of the disease process. Ludwig's angina is actually a misnomer, the disease having been discovered by Gensoul five years before Ludwig. The condition is merely a hypertoxic form of the gangrenous phlegmons involving the floor of the mouth, just as massive gangrene may set in in severe wounds of the extremities and in fulminating appendicitis. In involvements of the floor of the mouth general anesthesia nearly always leads to syncope, sometimes fatal, and should be replaced by local anesthesia or anesthesia by intercricothyroid laryngotomy.

Structure and Origin of the Dental Enamel. E. Retterer. *Comptes Rendus de la Societe de Biologie*, 1919, lxxxii, No. 16, p. 571.

The study of the dental enamel presents considerable difficulties on account of its indefinite composition; its thinness, its hardness and transparency not always permitting its distinction from the ivory. The enamel of the teeth of dogs from one to two years of age was examined by the author who is enabled to state on the basis of histologic findings that the enamel is not of epithelial origin. The histogenesis shows that enamel never appears without being preceded by ivory; not epithelial cells, but the peripheral extremities of the ivory strands become transformed into enamel prisms. If the enamel were a transudate, it would have no structure. If the enamel were derived from the enamel organ, it could not contain spaces between the strands, representing tubules of the ivory. However, as the tooth appears only in the cutaneous mucous regions where the superficial epithelium proliferates, to give rise to a bud which becomes an epithelial sheath, it is evident that the presence of this *predental organ*, of epithelial character, imparts to the mesodermic cells which it covers and surrounds, a developmental activity and power such as to induce them to build up a tooth. Although the epithelial cells furnish no element of the tooth, the development of the predental organ is the indispensable requirement for the formation of a tooth. It creates a medium adapted to the modification of the mesodermic cell and its transformation into an odontoblast. Moreover, this new cellular species produces not only ivory, but also enamel, the odontoblast being accordingly both eburniblastic and adamantoblastic or ameloblastic. These new data were secured by investigations of the structure of the enamel and its relations with the subjacent layers of ivory.

The Syndrome of the Posterior Lacerate Foramen. Rimbaud and Vernet. *Bulletin et Memoires Societe Medicale des Hopitaux de Paris*, 1918, series 3, xlii, 931.

As a result of injury by a bomb in the right temporomaxillary region, the patient presented, besides facial paralysis, complete paralysis of the right hypoglossal, glossopharyngeal, and spinal accessory nerves, as shown by atrophy of the right half of the tongue and deviation of the tongue to the right, loss of taste, and paralysis of the right half of the palate. Compression rather than division of the pneumogastric nerve was indicated by signs of irritation such as a paroxysmal cough, exaggerated salivation, hyperesthesia of the palatine arch, pain in the thyroid region on the right side, and paralysis of the right vocal cord.

Some of the Changes in the Deciduous Molar and First Molar Regions Approaching and During the Transitional Period. R. L. Davis. *Oral Health*, 1919, ix, No. 4, p. 143.

Attention is called by the author to the necessity of maintaining arch continuity and occlusion, as intended by nature, and of employing corrective means so indicated in case of loss of tooth or teeth, in order to guard against the otherwise inevitable imperfect development of arches and facial contours. With premature loss of deciduous molars, the arch continuity being broken, the first molars under pressure of second molars may drift forward (distance according to loss) more than they should at the transitional period. They also take on a mesial tip, and often a direct result of this is that there is not sufficient room for premolars to erupt. The break in arch continuity results in an interference with Nature's plan of forward development in this region. With the loss of substance in deciduous molars, there is a closing of the bite, the lower incisors slide along lingual inclined planes of upper incisors, eventually in some cases meeting palate of upper. The lower anteriors are in linguoversion, and the uppers after a time are also in linguoversion, due to lip pressure. The heavy overbite changes very much the contour of lower third of face; appearance is given of too much around the mouth, and mouth and chin too close together. In some cases, a congested area may be found around the upper incisors, caused by wrong occlusion of the lower incisors. There may be a condition where laterals are not free to erupt, also a pinching in of upper cuspids. The prevention and removal of causes of the abnormal overbite forms one of the great problems in the work of preventive orthodontia in our schools today. By solving the dental problems as they arise in childhood, especially those of an orthodontic nature, considerable advance will be made towards the solution of other problems now confronting the dental profession.

Industrial Dentistry. H. M. Brewer. *The Dental Summary*, 1919, xxxix, No. 6, p. 437.

The National Cash Register Company's Dental Clinic, in Dayton, Ohio, is conducted as a part of their great welfare work. The service is free to all em-

ployees, who are very appreciative of it, and the work is done on the company's time. The work consists of examinations with chart, first aid treatments, extraction of badly diseased teeth or roots, gum treatments, temporary fillings, prophylaxis, consultation, advice and instructions as to the proper care of the teeth and mouth. Estimates on the cost of dental work are not given and all work of a permanent nature is referred to the ethical practitioners of the city. A record is kept of all work done in the clinic. Lectures on subjects pertaining to dentistry are given to the employees, also to the children of the employees. The author, who is the dental clinician of the National Cash Register Company finds that the employees are very appreciative of this dental service. The field for industrial dentistry is large and the work does not end in the factory. The messages on mouth hygiene and preventive dentistry will be carried into the home by the employee, and the effect is bound to be far reaching.

The following is the National Cash Register Dental Clinic report for eight months ending January 31, 1919.

| | | |
|----------------------|-------|-------------|
| Examinations | | 735 |
| Decayed teeth | 2,663 | |
| Missing teeth | 684 | |
| Extractions | | 817 |
| Fillings | | 172 |
| Prophylaxis | | 811 |
| First aid treatments | | 543 |
| Gum treatments | | 182 |
| Abscess treatments | | 24 |
| Miscellaneous | | 405 |
| Consultation | | 118 |
| | Total | <hr/> 3,807 |

Institutional Dentistry (Insane). F. A. Keyes. *The Boston Medical and Surgical Journal*, 1919, clxxx, No. 4, p. 89.

The author calls attention to the fact that not enough attention has been given in the past to dentistry in public institutions, although proper care of the teeth is extremely important in connection with the welfare of the inmates. The possibilities for improvement in this direction are illustrated by a comparison of conditions as they prevailed among the inmates of the Medfield State Hospital in April, 1915, when they were examined by the author, and the findings on his last examination three years later, in April, 1918, after the most important of his twelve suggestions had been carried out to the letter. This institution has now had a resident dentist for over two years, and this is the only possible way in which the teeth of the inmates of large institutions can receive proper attention. The author's last examination of the patients at Medfield showed the following conditions, in spite of two years' intensive treatment by resident dentists:

| | |
|--------------------------------------|-----|
| Cases of pyorrhea | 203 |
| Cases of patients needing extraction | 160 |
| Cases of acute alveolar abscesses | 0 |
| Patients with carious teeth | 41 |

| | |
|---|-----|
| Patients in need of full upper dentures | 166 |
| Patients in need of full lower dentures | 49 |
| Patients in need of both upper and lower dentures | 301 |
| Number not examined | 6 |
| Cases needing cleaning | 426 |
| Wearing plates | 89 |
| Cases of stomatitis | 5 |

The amount of dental work still to be done in the Medfield State Hospital, where resident dentists have been appointed, following the author's suggestion, and with great resulting improvement, plainly indicates the existence of gross neglect on the part of institutions which have not as yet employed a resident dentist.

This important contribution is based upon the author's personal knowledge of dental conditions in one of the largest Massachusetts institutions and upon conclusions drawn after careful study of conditions indicated in health reports of superintendents and trustees of others.

An Interesting Case of Acute Alveolitis Maxillo-Dentalis, Commonly Known as Pyorrhea. W. A. Lurie. *The American Dentist*, 1919, viii, No. 12, p. 4.

The roentgenograms in the case of a woman twenty-seven years of age, all of whose teeth became very loose and painful after an attack of influenza, showed an alveolar process of greater porosity than usually seen in a patient of her type and age. It was apparent also that the alveolar process was undergoing an acute absorption in places; this was more defined about the loose teeth, where the absorption was not so regular or circumscribed as in chronic cases of alveolitis dentalis, but had a rather ragged appearance. The author suggests that roentgenograms of the long bones would perhaps have portrayed a corresponding porosity there. In order to stop the acute absorption of mineral salts from the jaws, general treatment was distinctly indicated, and the patient was accordingly placed on a high calcium content diet, with internal administration of calcium lactate and intermuscular injection of sodium cacodylate. General hygienic treatment was instituted, and special attention was directed to the mouth. At the time of the report, while it is too early to note any positive results in this case, the patient is more comfortable and the mouth less painful than since the onset of the trouble, during which the upper centrals and laterals became so loose that they had to be extracted. Bicuspid in the upper jaw were loose, but not in so bad condition as the centrals. In the lower jaws the centrals and laterals were also the most loose of any of the teeth, but the teeth in the lower jaw did not seem to have suffered as acutely as those in the upper.

The Importance of Dental Service in the Hospital. A. Crocker. *The Modern Hospital*, 1919, xii, No. 5, p. 328.

The author emphasizes the necessity of dental service along with medical service in healing systemic disease, pointing out that work for the dental de-

partment of a hospital is furnished by maternity cases, children's teeth, and cases in which arsenic, iodides, mercury or phosphorus are prescribed. Facilities for difficult extractions under anesthesia and for scientific research are also afforded by a hospital dental clinic. Besides this hospital dental work, research work in dental pathology and dental bacteriology can and should be carried on in connection with cases presented at the hospital. In the Cincinnati General Hospital, for example, patients arriving for diagnosis and treatment are taken to the dental clinic at the direction of the attending physician. "After instrumental examination of the teeth, the dental clinician sends the patient to the x-ray department for a complete dental roentgenographic examination. Ten films are taken, five upper and five lower, covering the complete mouth. One of the large machines is used on a two and one-half spark gap. The developed films are returned to the dental department, and together with the clinical report thereon, sent to the attending physician with the dental recommendations for the case. The dental diagnosis along with the attending physician's diagnosis of symptoms and other tests, such as urinalysis, bacteriologic, etc., make up the case history, which is kept on an indexed chart or card."

Dentistry in the hospital has shown its value in so many ways, and so many patients arriving at the hospital require dental care, that the department is very much in demand. Part of every day is devoted to the care of children's teeth at the Cincinnati Hospital, and oral surgery is performed for all patients requiring attention of this kind.

The Need of Dental Care in Hospitals. W. Cl. Adams. *Medical Sentinel*, 1919, xxvii, No. 5, p. 833.

The author points out that every hospital should have on its staff a wide-awake, competent dentist, whose duties should include consultation with the attending physicians and aid in diagnosis, as often by locating the source of infection in the mouth, many a needless operation may be and has been avoided. He should insist on the use of the x-ray for any suspicious teeth and hidden pyorrhea pockets, and above all, he should be able to give a proper interpretation of the radiograms. The hospital dentist's duties would include the performance of various emergency operations, the preparation of the patient's mouth before operation, also the instruction and supervision of the nurses in oral hygiene for the patients. The hospital should be equipped with dental engine and all other apparatus necessary for emergency operations of all kinds. The importance is emphasized by the author of cooperation between physician and dentist, particularly in diagnosis. Treatment for pyorrhea alveolaris and oral abscess is in great demand now that the medical profession has recognized the necessity for correction of conditions in the mouth. The time will soon come when no physician's diagnosis will be considered complete until the condition of the mouth has been thoroughly investigated by a dentist who is thoroughly competent. In the army, no hospital unit was complete without its quota of dentists, and while the majority of the army dentists were not called on to perform any but the most commonplace operations, those who had the necessary

special training in oral surgery accomplished wonderful results in plastic surgery and reconstruction of faces.

X-Ray Examination in a Case of Dentigerous Cyst in Connection with the Third Mandibular Molar. W. Ashley Cooper. *The British Dental Journal*, 1919, xl, No. 11, p. 410.

Examination of a woman twenty-three years of age, with a swelling on the left side of the mandible, showed the third molar to be missing, although the other three were normally erupted. The swelling was rounded and extended from the first premolar to about half-way up the ascending ramus, involving the whole of the bone in this region. It was quite hard except just behind the second molar (the roots of which on extraction were found to be absorbed) where fluctuation could be detected. X-ray examination showed the third molar situated very near the angle with one of its roots penetrating the under surface of the mandible. On opening up the cyst under a general anesthetic, the tooth was found to be very firmly implanted in the remaining bone, and a double dislocation occurred which was easily reduced. On examination the tooth was found to have four roots, situated in pairs, internal and external to the arch, the inner surfaces of which were deeply grooved in such a way that the inferior dental nerve and artery passed through, showing that these must have been forced almost to the outside of the mandible. After the extraction of the tooth, which took about fifteen minutes, the cyst was scraped and packed with gauze.

Dental Roentgenology. L. M. Martin. *The Texas Dental Journal*, 1919, xxvii, No. 6, p. 3.

In order to obtain a successful roentgenogram, the direction of the rays when possible must be at right angles to the long axes of the teeth, and the sensitized film or plate must be as nearly parallel with the teeth as it is possible to get it. The properly made roentgenogram will reveal with almost mathematical exactness the location of a bony process, the size and amount of tissue involved, but it makes no claim toward determining the exact etiology or whether the process is acute or chronic. When periostitis, osteomyelitis, osteosarcoma or alveolar destruction from pyorrhea is present, the well-made and properly interpreted roentgenogram will not only determine their presence, but will show the extent of the tissue destroyed. Any change resulting from disease or injury in the bony structures is easily determined by a properly made roentgenogram.

In the intra-oral method of roentgenographing the teeth, small sensitized celluloid films are used, which may be securely held against the lingual side of the teeth by the patient himself. The position of the patient and the direction of the central rays are of the greatest importance. Misconceptions frequently arise from distortions caused by taking the pictures from wrong angles. The shadows of the teeth may be greatly broadened and shortened, or lengthened and narrowed, by changing the angle at the time of exposure. In narrow mouths it is frequently impossible to keep the films from bending considerably when held

against the gums and teeth. One or more of the teeth as shown in the film may appear to be distorted, because of such a bend. Although x-ray negatives of all teeth may be obtained by the intraoral method, it is as a rule more practical to make plates of the lower molars, bicuspid, and often cuspids. For this purpose, sensitized glass plates in assorted sizes are commonly used. Some degree of distortion is unavoidable with the extraoral method, on account of the almost inseparable difficulty of bringing the plate near to and parallel with the teeth, moreover, a very slight movement of the patient's head will make the plate worthless, unless the lesion is a very large one. With the intra-oral method, slight moving of the patient will not be noticed in the film. In a study of the lower molars, both methods may often be used with splendid results.

In a well-made roentgenogram of the head it is interesting to note the radiolucency of the parts occupied by the sinuses; in normal individuals, the frontal, ethmoid, sphenoid, and maxillary sinuses are clearly delineated. If obstructed, filled with pus or otherwise diseased, the normal density will be changed to a varying degree. When an abscess exists at the root of a tooth, the radiolucency is changed in the area involved and a dark shadow is recorded on the plate. By radiolucency is meant a state of offering but slight resistance to the roentgen rays, according to the nomenclature adopted by the American Roentgen Ray Society in 1913.

The Findings of the X-ray. Editorial. Oral Hygiene, July, 1919, ix, No. 7.

The prevention of disease is today the great object of both medical and dental professions. Until quite recently all dentists were agreed as to the value of correct dental service, but with the advent of the x-ray there has come a serious questioning and a division of opinion among the profession.

It has been found that the x-ray picture, due to distortion and vagueness of outline, is in many cases most unreliable and, as one writer expresses it, "half a bet and half a guess." The correct interpretation of the film requires greater skill than the photographing.

The medical profession in their obstinate cases have not failed to diagnose the trouble as of dental origin and have ordered the removal of bridges and the extraction of teeth. This without consulting the dentist and, in many cases, without an x-ray examination. In other cases the patient under treatment has gone to the dentist and he, finding an ulcerated tooth or teeth, persuaded the treatment of it without results. The patient is disgusted with the treatment of the physician, and has no faith in the dentist.

We are prone to tell of our success in the treatment of these cases and say nothing of our failures. The truth is that many cases are treated to the best of our ability and refuse to clear up. The treating of the teeth is without apparent benefit. A case in point is that of a patient of the editor who was suffering from rheumatism so much that she had her knee in a plaster cast and was going about her work on crutches. The upper teeth were extracted and a most satisfactory denture inserted. On the lower jaw was located a bridge, one abutment of which was swinging back and forth in a pool of pus. The other teeth were badly infected. When it came to having them out the patient

objected and said she would rather die than have a lower plate. She persisted in her refusal but, strange to say, after a short time discarded her plaster cast and her rheumatism disappeared entirely. Had she consented to the removal of the lower teeth and the substitution of an artificial denture, nothing could have convinced us but that the extracting of the teeth was the cause of her recovery. Perhaps it may be argued that the removal of the diseased teeth in the upper jaw was enough to swing the balance and make her recovery possible.

Men are practising dentistry with the loss of confidence that they are doing the best thing for the patient, and with the advent of the x-ray this has been intensified. We are passing through a stage of doubt which the medical profession has faced for years. Undoubtedly the time will come, perhaps not in this generation, when we will have settled down to the mode of practice that is accepted as for the best interests of the patient. Until that time we must be content to go ahead and use our best judgment and trust in the future that this will be justified.

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EDITORIALS

The N. D. A. Meeting at New Orleans

ORTHODONTISTS should plan now to attend the next annual meeting of the National Dental Association at New Orleans from the 20th to the 24th of October. The meeting will of course be a great success. Many papers bearing directly and indirectly on orthodontia will be presented.

He who visits New Orleans at the end of October, when the members of the National Dental Association are scheduled to gather in that interesting Southern capital, will have a feast for the eye as well as a delight for the mind. Here the eighteenth century shakes hands with the twentieth, and, as in some of the charming old capitals of Europe, there is but the need of a score of steps to turn back the pages of time a couple of hundred years. Resistant to the inroads of progress, the old structures have remained, the Cabildo, for example, in which

sat the Spanish councillors who made the laws for the province of Louisiana. Here was consummated the purchase of the Louisiana territory, now divided into more than a dozen states of the Union, and in the main "sala" the representatives met whose principles were Napoleon Bonaparte and Thomas Jefferson. It is a fitting use for such a historical edifice that the Louisiana State Historical Society holds its sessions in the great hall. Beside the Cabildo stands the Cathedral, which at the moment is nearing its centennial.

In the old quarter, the French section, the relics of days of long ago persist. Here are the close-shuttered, balconied houses, which have a history of slavery; there is the quiet paved street with its ancient houses, in touch with the present day by the sign, "One-Way Street," while on every hand there is the romance of a tropical, out-of-doors, flower-embowered city. Quaint archways lead from the streets, through which one catches glimpses of domestic life, the well-nourished Southern "Mammy" in the shade of the soft-hued wistaria or the more florid courtyard with its reminders of former beauty. Here a fountain splashes in the filtered sunlight, there a bed of posies gleams in the brilliance of noon, above a balcony tells perhaps the story of some local Juliet, while luxuriant shrubbery, roof of tiles, shuttered windows and the presence of flowers, breathe picturesqueness and antiquity,—the peculiar charms of this ancient quarter of this old city.

New Orleans in its picturesqueness and its famous welcome to visitors calls for a record meeting, one worthy numerically of representing the great National association of dental practitioners that is to assemble there.

Fishing Will be Good at New Orleans

MEMBERS of the National Dental Association fond of fishing had better bring their strongest rods and reels to New Orleans when they come to the national convention, October 20-24. The waters surrounding New Orleans are teeming with edible fish from the aristocratic and palatable pompano and mackerel to the plebian and coarser textured catfish and chopique.

"Spend your vacation in New Orleans in October," is a slogan the general convention committee has adopted in urging members to be here for the big meeting. It is understood many will follow this plan. The Indianapolis delegation, coming nearly 100 strong, have announced they intend to fish and enjoy life generally. This does not mean they will pass up the convention; they intend to take to the great outdoors after the meeting is adjourned.

October is an ideal fishing month around New Orleans. The city is surrounded by lakes, bayous, passes, and other forms of water easily reached by railroad. All of the fishing resorts boast clubs at which fishermen can obtain live bait, tackle, food, motor launches and other things that go with a day on the water.

Steps have been taken by the State Conservation Commission to preserve fishing for the whole state; this does not mean that fishing is restricted. These

rules apply principally to commercial fishing, the sportsman having ample leeway to catch as many as he likes.

In addition to the speckled trout, red fish, buffalo, drum, croakers and sheep-head, the waters abound in sharks and tarpon, the latter measuring all the way from 2 to 6 feet and weighing from 10 to 200 pounds. The tarpon feed on mullet, lying in wait two feet under the surface until a school appears overhead. The tarpon then jumps and splashes, killing mullet right and left. This provides his feast.

As all fishermen know, the tarpon is a fighter, and many are the memorable battles that have been staged in Louisiana waters. The guide of the Winchester Club at Lake Catherine, only a few miles from the city, has for a trophy a tarpon measuring 6½ feet. He landed the monster in twenty minutes with ordinary reel and rod.

When it comes to fish stories, nearly every sportsman in New Orleans can spin them. For instance, Doctor Joseph P. Wahl, general chairman of the local committee, recently visited Mississippi Sound where he caught five red fish averaging five pounds in about five minutes.

"They were grabbing the hook before it hit the bottom," he declared.

Not to be outdone, another member of the committee told how he caught a number of 15 pound drums off Deere Island, a famous government game preserve.

One of the favorite methods of fishing is to "bait the hole" the night before. Clams usually are used for this, the bait attracting sheepheads. One fisherman who recently visited Chef Menteur baited a hole the night before and went out early next morning. He caught 30 sheepheads weighing all the way from one to five pounds.

Among the famous fishing holes within a few minutes ride of the city are Lake Pontchartrain, the Rigolets, Lake Catherine, Little Woods, Chef Menteur, South Point, Biloxi, Pass Christian, Bay St. Louis, Ycloskey, Mandeville, Milneburg, Spanish Fort, West End, Lake Borgne and other places too numerous to mention.

New Orleans, the largest sea food market in the world, also is famous for its oysters. It has been said (by visitors) that the oysters sold in New Orleans have a much richer flavor than the famous Chesapeake Bay product. However, this is a point for discussion among oyster consumers.

Soft shell crabs, frogs, shrimp, clams and hard shell crabs are plentiful in New Orleans and occupy a prominent place on all menus. Those who like sea food will make no mistake by coming to New Orleans whether they are able to go out and catch it or not.

"They'll be bitin', boys; come along," is the word the local committee sends out.



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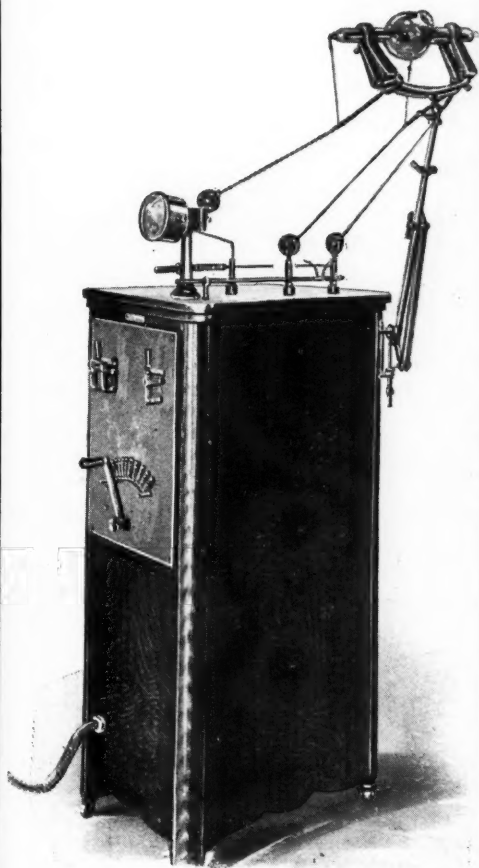


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